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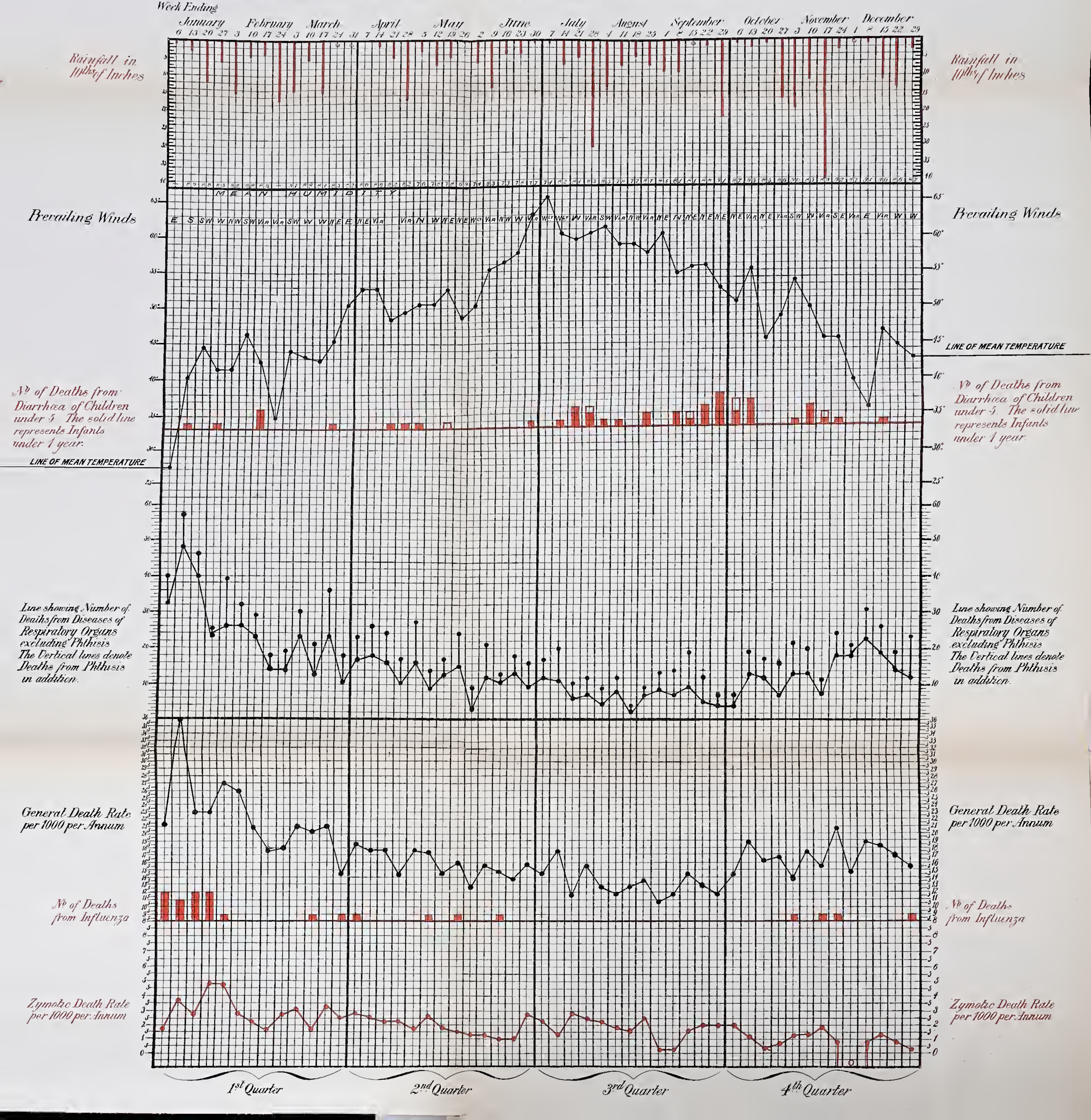
Chart

Showing Mean Temperature. Rainfall, relative Humidity, (saturation =100) prevailing Winds, also Number of Deaths returned from Diseases of Respiratory Organs excluding Phthisis, from Phthisis, from Diarrhœa, and from Influenza, the General Death Rate and the Zymotic Death Rate in the Bristol Sanitary District for each Week of the Year 1894.



1894.

CITY & COUNTY OF BRISTOL.

ANNUAL REPORT

OF THE

Medical Officer of Health.

Printed by Order of the Sanitary Committee.

BRISTOL:
Bennett Brothers, Ld., Printers, Counterslip.
1895

SANITARY COMMITTEE,

1894-95.

The Mayor: Mr. Councillor Symes.

Chairman: Mr. Alderman Cope Proctor.

Vice-Chairman: Mr. Councillor Pearson.

Mr. Councillor Barnett.
Mr. Councillor Bastow.
Mr. Councillor Cave.
Mr. Councillor Cottrell.
Mr. Councillor Coulthard.
Mr. Alderman Dix.
Mr. Councillor Levy.
Mr. Councillor Lewis.
Mr. Councillor Lloyd.
Mr. Councillor Swaish.
Mr. Councillor Todd.
Mr. Councillor Wathen.

Bristol Urban Sanitary Authority.

MEDICAL OFFICER OF HEALTH'S DEPARTMENT 1894.

Medical Officer of Health:
D. S. Davies, M.D. (Lond.), D.P.H. (Cantab).

Assistant Medical Officers of Health:
J. C. Heaven, L.R.C.P., D.P.H.
W. Dowson, M.D., D.P.H. (Cantab).

Inspector of Nuisances: Chief Inspector J. W. Kirley.

Superintendent Inspector: *‡T. Lowther.

District Sanitary Inspectors:
District No. 1—*J. Wilkinson.
No. 2—*H. Hasell.
No. 3—*†F. R. Slade.
No. 4—G. E. Bush.
No. 5—*†A. E. King.
No. 6—H. Calcutt.
No. 7—*J. T. Lyons.

Special Sanitary Inspectors:

Inspector of Bakehouses and Common Lodging Houses:
* S. O. Dimond.

Inspector of Meat, Fish, and Slaughter Houses: S. Thomas

Inspector of Dairies, Cowsheds, and Milkshops:
*†E. J. Casely.

Inspector of Houses Let in Lodgings: †H. C. Leat.

Inspector of Workshops, Smoke and Offensive Trades:
* H. J. Kirley.

Statistical Clerk: E. W. Harris.

Clerk: R. R. Warren.

Medical Attendant at the City Isolation Hospitals:
Dr. G. C. Pauli.

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* Certified Inspector Sanitary Institute.
‡ Certified Surveyor Sanitary Institute.
† Registered Plumber.

REPORT.

PART I.

General Sanitary Condition of the Urban Sanitary District of Bristol.

GENTLEMEN,

The present limits of this District are those of the City and County of Bristol as fixed at the last extension of the boundaries in 1835, and containing a population enumerated at the last census (1891) at 221,578, and estimated to the middle of the year 1894 at 226,578.

The increase of population during the 60 years since 1835 has caused the population to overflow in such manner that Bristol proper forms now but part of a larger Bristol, and the City is surrounded on two sides by Urban Districts containing an aggregate population of 59,509 (Census, 1891), under different administrations, but with continuous streets and houses, and forming practically one and the same community with the City.

Site and Soil.

Bristol is situated in N. Lat. 51° 27′ 6·3″ and W. Long. 2° 35′ 38·6″. The old City lies in great part on low ground in a broad valley lined by the alluvial deposit of the Avon and its tributary the Frome: part of the City, *e.g.*, High Street and Redcliff, being upon higher ground on the new red sandstone (trias), through which rock the New Cut, or artificial course of the Avon, has been cut, and upon which Bedminster is built.

The high table land of Clifton, Cotham, and Redland, to the north and west of the City, is situated upon the denuded edges of an anticlinal arch of carboniferous rocks, upon which, in certain limited areas, beds of newer formation (*e.g.*, lias) lie unconformably. On Clifton and Durdham Down the Carboniferous limestone is exposed over a large area; and here the gorge of the Avon, cut by the river as it turns to the north to join the Severn, forms the western boundary of the district.

The steep ascents, extending from Granby Hill on the west, past Brandon Hill to St. Michael's Hill and Marlborough Hill on the east, are on the outcrop of the millstone grit.

Considerable portions of the north-east and east parts of the City lie upon the new red sandstone, while Totterdown, part of Cotham, and the slope towards Ashley are upon beds of lias limestone.

Water Supply.

The Water Supply is in the hands of a Private Company, and is obtained by gravitation from springs in the triassic conglomerates, and in the carboniferous limestone on the sides of the Mendips, at distances of from 5 to 16 miles from the City. The water from two of these springs (Sherborne and Coldbath) is brought direct into the City; that from the other springs is intercepted by the storage reservoirs at Barrow Gurney, 310 feet above Ordnance datum, with an extreme holding capacity of 750,000,000 gallons, whence it is brought into the City, joining the direct supplies at Redcliff. The combined waters supply the lower parts of the City *en route*, and also rise by gravitation to the pumping station and reservoir at Oakfield Road (200 feet above O.D.), from which they are pumped up to the Durdham Down service Reservoir (320 feet above O.D.) for the supply of Clifton and the higher parts of the City.

After the dry winters of 1861-63, it was found necessary to provide permanent pumping works for a supplementary supply in dry years, from deep wells at Chelvey, eight miles from Bristol, sunk in the new red sandstone (triassic), 200 yards from any inhabited place.

The water is supplied to the City at constant service, and the average daily supply per head is calculated at about 22 gallons.

All water supplied from the Barrow store reservoirs is now filtered before delivery.

As to any risk of excremental contamination, the water appears to be above suspicion; and no case of disease has within our knowledge ever been traced to its use.

The Company has power to make an annual charge for each closet flush, in addition to the charges for other domestic purposes, not now enforced in the case of a second W.C. cistern in houses of the gross value of £30 and under, hence the majority of out-door closets throughout the City are dependent upon hand flushing.

New Source of Supply.—In 1888 the Company obtained powers to take the Richford Spring, near Blagdon, and the Langford Spring, at Langford, subject to reservation of prior claims of the district upon those springs: and in 1889 they obtained powers to make a reservoir by impounding the river Yeo. This reservoir, to contain a maximum of 1,700,000,000 gallons, will receive the water from these combined sources, and from it the water will be lifted to join the storage at Barrow. The source of the Yeo is from deep springs, similar to those furnishing the established supply.

In view of the great danger of polluted water-supplies, more especially in times of Cholera, special attention has been directed for some years to the condition of the local wells, many of which are still in use, especially in the lower parts of the City. During the last year 52 samples have been subjected to analysis, the closure of 27 polluted wells has been secured, and a pure supply of water has been laid on to 79 houses. Similarly, in the past six years, 144 polluted wells have been closed, and a total of 544 houses supplied with pure water, corresponding to a population of over 3,000 persons.

Mr. F. Wallis Stoddart, F.I.C., F.C.S., the City Analyst, reports with regard to the 52 samples of shallow well water analysed by him :—

All but one were found to be polluted with sewage. As these wells mostly derive their supply from the same unsatisfactory gathering ground described in a former report (1893), it is not surprising to find that they differ amongst themselves only in the degree of pollution. The single exception consisted of rain water stored in an underground cistern : it was so full of putrescent organic matter, not, however, of sewage origin, as to be likely to be prejudicial to health.

Analysis of Water Supplied by the Bristol Water Works Company.

(Results stated in Grains per Imperial Gallon.)

	GAUGE HOUSE, BARROW. (Unfiltered Water.)	COLD BATH. SPRING.	DEEP WELL. CHELVEY.
COLOUR IN 2FT TUBE. SEDIMENT.	GREENISH BROWN. SAND, ALGÆ.	PALE GREEN. NONE.	PALE GREEN. NONE.
Saline Ammonia ...	·001	·0007	·0002
Albuminoid Ammonia	·004	·0020	·0010
Nitrogen as Nitrates	·09	·12	·17
Nitrites	None	None.	None
Chlorine as Chlorides	·97	·91	1·13
Oxygen absorbed in 7 hours	·039	·003	·014
Total dissolved Solids	19·70	23·50	22·54
Lime	9·06	11.05	9·88
Magnesia	·65	·92	1·18
Sulphuric Anhydride ($S.O_3$)	·86	·98	·83
Lead, Copper or Zinc	None	None.	None
Total Hardness	16·0	20·5	20·0
Permanent Do.........	3·5	4·5	5·0

F. WALLIS STODDART, F.I.C., F.C.S.
City Analyst.

	COURSE.	SIZE.	MEAN GRADIENT.	LENGTH OF NEW SEWERS.	AREA DRAINED	POINT OF DISCHARGE	COM-PLETED IN
1. Clifton High Level.	Hampton Road under College Grounds, and New Zigzag	3ft. 6in. by 3ft. oval, to 4ft. by 3ft. 6 in.	1 in 300 1 in 4 at outlet	11 miles	1,041	Tidal Avon below Zigzag.	1857
2. Bedminster 1 2 3	East Street, Parson's Street, Avon Sewer District.	4ft. 6in by 4ft. 2ft. 6in by 2ft 6ft. by 5ft. 6in.	.... 1 in 300 1 in 300	5¾ miles	607	Tidal Avon at Clift House.	1858
3. Clifton Low Level	Jacob's Wells, Hotwell Rd St. Vincent's Parade.	3ft. 6in. by 3ft. to 4ft. 6in. by 4ft.	1 in 600	3 miles	279	Joins High Level Outlet.	1859
4. St. Philip	Baptist Mills, Old Market Street, Bread Street. beneath Feeder Canal,	3ft. 6in. by 3ft.	1 in 500	7 miles	685	Tidal Avon at Totterdown Lock.	1861
5. Frome High Level	Stokes Croft (receiving Horfield): Maudlin Street, Frogmore St., College St.	3ft. by 2ft. 6in.	1 in 201·5 (at Frogmore St. 1 in 19)	8 miles	1,288	Joins Low Level Main.	1866
Low Level	Baptist Mills, Ashley Road, Newfoundland Rd., Broadmead, under Froom (receives, St. George & Stapleton).	3ft 6in. by 3ft. to 4ft. 6in. by 4ft.	1 in 600			Joins Avon Intercepting Sewer. (*a*)	
6. Avon Intercepting *a*	Stone Bridge. Marsh Street, Prince Street (beneath Floating Harbour).	5ft. by 4ft. 6in.	1 in 890	8¼ miles	518	Tidal Avon near Old Gaol	1874
b Main on South of Avon	Totterdown Lock, down Coronation Road	6ft. to 7ft. 9in.	1 in 2 310			Tidal Avon at Clift House.	

Sewerage, Drainage and Excrement Disposal.

Bristol is completely sewered, cesspools are not countenanced, and no dry systems of disposal are in use. The aggregate length of the main sewers is about 150 miles, and the cost of construction, commenced in 1851, amounted to about £161,000. The sewers take all storm water, which reaches them by way of trapped street gullies: they are without any external openings or special ventilating outlets, and the manholes are all closed down. In the low level sewers provision has been made for flushing from the Floating Harbour, and double tidal-valves are fixed at their outlet. These valves are of cast iron, oval or circular, and self-acting, being hung on chains and bedded on India-rubber.

The sewers are so designed and constructed with regard to capacity, fall, and position, that they may be ultimately converged to one point, from which an outfall sewer may be continued to a suitable point lower down the river, or into the Severn Channel. The sewage is discharged, without treatment, into the tidal Avon, and the rapid scour of the tide, which in this Channel is of exceptional force, generally results in the removal of the sewage without offence, although in remarkably dry summers, when fresh water is deficient in the river, some nuisance is complained of. No increase or excess of sickness in the City has ever been ascribed to this cause, and, as the water is muddy and brackish, it is never used for drinking or domestic supply by any town or village within the tidal range; and any extension of the sewerage system by which the sewage is prevented from discharging into the Avon, and carried to the Severn or elsewhere, will be more a matter of public convenience than an urgent necessity on the score of health.

Cleansing, Ashing, and Street Watering.

This work, formerly carried out by contract, was in November, 1892, taken by the Sanitary Committee into their own hands, under the supervision of the City

Engineer, who reports to the Committee. The erection of the Destructor at Albert Road, St. Philip's, has led to the discontinuance of the old Refuse Tips, which caused some inconvenience and much complaint.

Slaughter Houses.

The condition of the City Slaughter Houses received exhaustive consideration during 1893, and a special Report on the subject has been prepared and presented to your Committee (May, 1895).

Isolation Hospital Accommodation.

As pointed out in the Annual Report for 1893, the pressure of the smallpox epidemic, which commenced in the autumn of that year and continued until July, 1894, had necessitated, in addition to the use of the Port Shore Hospital, Avonmouth, and the Hospital Ship for convalescent cases, the hasty erection of 50 beds upon the Novers Hill Site. These are contained in three double-walled wooden Hospitals, which, though erected under pressure, are well built, and will be retained as a useful nucleus for the City permanent smallpox provision. As the Local Government Board did not advise the erection of Fever Isolation Wards upon the same site, your Committee has secured a further larger site where, upon sanction being obtained, Fever Isolation Hospitals may be built. In the meantime, the temporary isolation accommodation for fever cases afforded by the 30 beds at Clift House has proved of great service.

The provision of adequate isolation accommodation, always a difficult question in the neighbourhood of a large City, has now engaged the serious attention of your Committee for eight years, and it would appear that at length your steady perseverence in the face of numerous and unexpected difficulties is within measurable distance of meeting success.

Upon the subsidence of the Smallpox Epidemic, the older smallpox block at St. Philip's Marsh was taken down and burnt on the spot, the newer fever block of 12 beds being thoroughly disinfected, cleansed, and re-painted in and out to serve, under the Infectious Diseases Prevention Act of 1890, as a temporary refuge for poor persons during the disinfection of their houses.

Central Disinfecting Station.

The reconstruction of the Disinfecting Station, so as to give proper facilities for the rapid and safe execution of the large amount of work done, is a matter of urgency, and might well be undertaken now that infectious sickness is not unduly prevalent.

The growth of disinfecting work has, in consequence of the strict control of infectious cases exercised since the adoption of the Notification Act of 1889, increased from a total of 3,319 articles dealt with in 1884 to the far larger figures of 46,959 disinfected in 1893, and 36,274 in 1894.

In consequence of this, while the Washington Lyons Machine still meets all requirements, the receiving, sorting, and distributing rooms are totally inadequate, and require enlarging and re-modelling. The lack of proper accommodation of this sort introduces a real danger of re-infection of articles during periods of exceptional pressure, and I have prepared the following specification of accommodation required at the Central Station in St. Philip's Marsh :—

A Block containing

1 Receiving Room, 24 ft. by 12 ft.
1 Sorting Room, 24 ft. by 12 ft.
1 Bath Room for men, containing 2 Baths and Dressing Room.
1 Hand Lavatory and Urinal and W.C.
1 Commons Room.
Small General Office.
Sheds for 2 Disinfecting Carts and Shelter for Horse

During the year two Inspectors in the Health Department have resigned; Inspector J. F. Cotty, in charge of the Workshops' Inspection, on receiving the appointment of Assistant Inspector of Factories under the Home Office, and Inspector W. H. Perry, on appointment as an Inspector under the London County Council.

Your Committee appointed Messrs. A. E. King and H. C. Leat to fill the vacant Inspectorships.

VITAL AND MORTAL STATISTICS.

The estimated population of the Bristol Urban Sanitary District, for the middle of 1894, based upon the Census enumeration of April, 1891, is 226,578, the Acreage is 4,538 (Ordnance Calculation), with a density of 49·93 persons per acre.

The population of the City has, for the last few years, been considerably over-estimated, owing to the fact that the population has not increased at so great a rate during the last intercensal period (1881–1891) as it did during the previous intercensal period (1871–1881). The consequent error amounted in 1891 to as much as 10,199, and as a result the birth and mortality rates have for some years appeared lower than was actually the case. For example, whereas the recorded birth and death-rates for 1891 are 30·29 and 20·8 respectively, these rates calculated upon the incorrect estimate would have appeared to be 28·25 and 19·94.

All figures in this report, both for the current year and for previous years, have been revised upon the recent Census enumeration.

This table shows the acreage and number of persons per acre for each of the Registration Sub-Districts.

Table A.

Showing Population, Acreage, and Number of Persons per Acre (Density) in each of the Registration Sub-Districts of the Bristol Urban Sanitary District, at the Census of 1881, and for the middle of 1891 and 1894.

Registration Sub-Districts.	Acreage.	Population.					
		Census, 1881.	1881, Density.	†Estimated to middle of 1891 on Census	1891 Density.	Estimated to middle of 1894.	1894 Density.
St. Mary Redcliff ...	170	9,602	56·4	9,287	54·6	9,197	54·1
Castle Precincts ...	119	6,768	56·8	5,558	46·7	5,252	44·1
St. Paul	148	18,643	125·9	19,046	128·6	19,166	129·5
St. James	68	8,420	123·8	7,817	114·9	7,648	112·4
St. Augustine ...	250	14,066	56·2	13,788	55·1	13,707	54·8
Bedminster	992	37,741	38·0	45,812	46·1	48,023	48·3
Clifton	921	28,702	31·1	29,361	31·8	29,559	32·1
Ashley	434	19,106	44·0	24,190	55·7	25,715	59·2
St. Philip	744	50,108	67·3	51,650	69·6	52,064	69·9
Westbury	692	13,347	19·2	15,540	22·4	16,247	23·4
Bristol Urban Sanitary District TOTAL	4,538	206,503	45·5	222,049	48·93	226,578	49·93

* Ordnance Calculation.

† The Census Enumeration is made at the end of the first quarter of the year, whereas the statistical returns are calculated on the increased population estimated to the middle of the year.

It will be noticed that in the old in-parishes of St. Mary Redcliff, Castle Precincts, St. James and St. Augustine, the population is steadily decreasing, partly through absence of room for building extension, and partly through conversion of dwellings into business premises, or demolition for street or other improvements. The most densely populated districts are those of St. Paul and St. James, while the districts of St. Philip, Ashley, St. Augustine and Redcliff also show very high density figures.

Births.

The births registered in Bristol in 1894 were 6,393, of which 189 were returned as illegitimate, a percentage of 2·9.

The birth rate for the year was 28·81, a decrease on the rate of last year, which was 30·14: the rate has since 1881 shown an almost continuous decrease, interrupted by a slight rise in 1889, and again in 1891 and 1893 (Table B). The rate for the 33 great towns in 1894 was 30·7.

The excess of births over deaths during the year 1894 *(natural increase of population)* is 2,505. The estimated *actual increase* from 1893 amounts to 1,550.

Marriages.

2,609 Marriages took place within the Borough of Bristol during 1894, viz., 920 in the Bristol Union, 1,293 in the Barton Regis Union,* and 396 in the Bedminster Union divisions of the Borough. The annual rate per 1,000 living is thus 11·5, compared with 11·3 in 1893, and 11·6 in 1892.

Deaths.

3,888 Deaths were registered in the District during the 52 weeks ending 29th December, 1894, of which 63 or 1·6 per cent. were returned as deaths of illegitimate children. The general death rate for the year, uncorrected for age and sex distribution, is 17·16 per 1,000 living.† The lowest rate yet recorded for the city.

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* The Barton Regis Returns include the extra Municipal portion of that Union.

† As various towns differ much in the sex and age distribution of their population, it is obvious that a town containing a too large proportion of very young or of very old persons, or of males, amongst which classes the death-rate is almost invariably in excess, will compare unfavourably with another town in which the distribution of the population is nearer the average although the death-rates at each successive age period might be precisely similar in the two towns. A correction factor is supplied by the Registrar-General, by which the disparity of age and sex distribution is equalised for the great towns. The factor for Bristol is 1·0447, and multiplying the observed death-rate by this factor, the corrected rate, which is now comparable with the corrected rates for other towns, is 17·92.

Infant Mortality.

Of the 3,888 Deaths, 948 were of infants under one year. The proportion of these deaths to every 1,000 births (Infant death rate) was 148·31.

This rate varied thus:—203·2 in Redcliff, 164·5 in St. Philip, 161·6 in St. Paul, 152·0 in Castle Precincts, 142·7 in Bedminster, 130·3 in St. Augustine, 122·7 in Clifton, 120·0 in Ashley, 118·2 in St. James, 97·5 in Westbury.

In Table B will be seen the annual infant rates in Bristol for the past 18 years. During 1894 the infant mortality ranged in the 33 large towns from 217 in Preston, 179 in Liverpool, and 174 in Nottingham and Salford, to 135 in Halifax, 131 in Portsmouth, 123 in Derby, and 121 in Croydon. The Rate in Bristol was 148.

Mortality at Ages between 1 and 60.

1,863 Deaths were returned, corresponding to an annual rate of mortality per 1,000 living between these ages of 9·6. The rate for the 33 great towns between these ages was 12·0 in 1893, and 10·5 in 1894.

Mortality amongst Aged People.

1,077 Deaths of persons aged 60 and upwards were registered, whose ages averaged 72 years and 6 months. This number is somewhat less than last year (1,283) and the average age at death is 4 months lower. The rate of mortality amongst persons living at these ages was in Bristol 66·0, and for the 33 great towns was 79·5 in 1893, and 64·6 in 1894.

Table showing Diminution or Excess of Deaths in 1894, compared with Annual Deaths in 1884-93.

(The corresponding figures for 1893 and the preceding decennium are also shown for comparison.)

CORRECTED FOR INCREASE OF POPULATION.

Diminution in 1893	Excess in 1893	Cause of Death.	Diminution in 1894	Excess in 1894
—	13	Small Pox	—	8
96	—	Measles	4	—
26	—	Scarlet Fever	52	—
—	—	*Typhus	—	—
—	47	Influenza	2	—
30	—	Whooping Cough	—	62
—	30	Diphtheria	—	23
3	—	Enteric Fever	7	—
—	21	Diarrhœal Diseases	42	—
—	34	Cancer	—	28
33	—	Phthisis	57	—
—	40	Premature Birth...	—	7
—	108	Diseases of Nervous System ...	—	34
—	58	Do. Circulatory System ...	34	—
22	—	Do. Respiratory System ...	168	—
—	2	Do. Urinary System ...	20	—
—	3	Childbirth and Puerperal Fever	3	—
8	—	Violence	30	—
283	—	All Other Causes	293	—
501	356		712	162
145		Balance of Diminution	550	

* This disease has caused only 3 deaths in the 10 years, 1884-93, viz 2 in 1884 and 1 in 1890. The deaths annually due to this cause for these 10 years, are, therefore, represented by the minute figure 0·3 which is too small to affect the balance of diminution and excess.

This table shows, in summary form, the amount of life saved and the amount lost in the year 1894, as compared with the preceding decennium, under each of the more important headings in the list of causes.

The net gain in the year amounted to 550 lives, that is to say, had the death-rate in the year been equal to the average in the preceding decennium, 550 more persons would have died in Bristol than was actually the case.

The Registrar-General has pointed out in the case of London, that the excess shown under certain headings, such as Cancer, and Diseases of the Circulatory System, appears to be part of a general tendency to increase under these headings, which has been noticed for some years past. But in Bristol, while some increase in Cancer is maintained, the excess is by no means so great as was noticed in 1893, and Diseases of Circulatory System show in place of an increase of 85 above the yearly decennial average, a satisfactory decrease of 34 below this figure. The decrease in mortality from diseases of the Circulatory System is probably connected with the lessened prevalence of Influenza which shows a decrease of 2 in place of an increase of 47 observed in 1893. The diminution in fatality from diseases of the Respiratory System, which in 1893 was represented by 22, has this year fallen to 168. Phthisis also shows a satisfactory decrease to 57 from 33 in 1893.

Of the principal Zymotic Diseases, excess is noticed in the case of Small-Pox, which prevailed during the early months, of Whooping Cough, and of Diphtheria, but the Diphtheria excess has fallen to 28 from 34 in 1893, and diarrhœal diseases from an excess of 21 to a decrease of 42, a result largely due to the mild and wet summer and autumn.

The fatality from diseases of the Nervous System has fallen from an excess of 108 in 1893, to an excess of only 34; possibly another result of the lessened prevalence of Influenza.

Altogether the figures of the year reflect a very considerable saving of life as compared with those returned in 1893, and with those for the preceding decennium.

Vaccination—Pauperism.

BRISTOL UNION.

Returns kindly supplied by J. J. Simpson, Esq., Clerk to the Guardians of the Bristol Incorporation :—

Vaccination. The most recent available return as to Vaccination is that of 1893; from which it appears that the 1,542 children registered as born during that year, within the limits of the Bristol Incorporation, are accounted for as follows :—

Number successfully vaccinated	1186	1542
Insusceptible	13	
Died unvaccinated	175	
Postponed by Medical Certificate	18	
Removed to Districts, the Vaccination Officer of which has been duly apprised	15	
Cases left and not traceable ...	115	
In abeyance	20	

The percentage of Children successfully vaccinated out of the total number of births is 76·91, as compared with 76·32 in the previous year, 1892, an increase of about ½ per cent.

Comparing these results with the latest available return for the whole of England and Wales—that for 1891—we find that the percentage of the successfully vaccinated was for that year in England and Wales 75·8, and the percentage of deaths of unvaccinated children, 10·5. In the previous year (1890) the percentages were :—successfully vaccinated, 78·0; died unvaccinated, 10·5. Thus there was a falling off of 2·2 per cent. in 1891 of successful vaccination, compared with the previous year.

The most recent statement as to Vaccination in 1894 is obtained from the account of fees paid to the Vaccination Officers for registering certificates of successful vaccination received by them during the year. The number of certificates so received by them and registered in 1894 was 1,106; but this figure is subject to correction on account of children who, though registered as successfully vaccinated during the year, may have been born in 1893, or in some previous year.

The numbers ascertained in the same manner for previous years were as follow—1893—1,283; 1892—1,249; 1891—1,294; 1890—1,299.

There has been no special outbreak of any infectious disease, which has resulted in an increase of persons relieved, or in pressure on the Hospital for Infectious Diseases at the Workhouse.

The number treated in this Hospital, which has accommodation for 24 Small Pox and 48 Fever cases, has not exceeded 18, any day during 1894.

The Guardians are anxious to utilise this building for ordinary sick cases, for which additional accommodation is needed; but until the Urban Sanitary Authority have provided sufficient accommodation for all cases of Infectious disease for their area, the Guardians feel obliged to incur the expense and inconvenience of retaining the Hospital for pauper cases of diseases of an infectious nature. They have entered into an agreement with the Barton Regis Union, to receive such cases from their Union into the Hospital.

Pauperism. The cost of relief in the year to Michaelmas, 1894, was more than the cost in the year to Michaelmas, 1893, by £211, viz:—

Decrease in cost of maintaining Indoor poor	£21
Increase „ „ Outdoor Poor	£232

The lowest number of indoor poor, in any week in the year, was 859, and the highest number 1,028.

The lowest number of outdoor poor, in any week in the year, was 1,650 and the highest number 2,013.

BARTON REGIS UNION.

From returns kindly supplied by C. H. Hunt, Esq., Clerk to the Guardians,

The most recent complete Vaccination returns available are those for the year, from January 1st to December 31st, 1893, inclusive, and from 1st of January to 30th June, 1894, inclusive, from which it appears that the 8,918 children born during the 18 months, are accounted for as follows :—

Number successfully vaccinated	6,502	
Insusceptible	45	8,918
Had Small Pox	1	
Dead—unvaccinated	914	
Postponed by Medical Certificate	499	
Removed to Districts, the Vaccination Officer of which has been duly apprised	56	
Cases left and not traceable ...	664	
In abeyance (31st Jan., 1894) ...	237	

The percentage of children successfully vaccinated out of the total number of births is 72·0, and the percentage of deaths of unvaccinated children to total births is 10·2

The following are the particulars available in regard to vaccination, for the year ended the 29th September, 1894.

Number of successful primary vaccinations of persons :—

Under One Year.	One Year and Upwards.	Total.	Number of successful Re-vaccinations.
738	93	831	517

Pauperism. The cost of relief during the year to Lady-day, 1894, was as follows:—

In maintenance	£9,527	1	0
Out-relief (including non-resident and boarded Out Paupers) ...	£16,768	19	6
Lunatics in Asylums	£11,850	3	2
Pauperism, Hospitals, &c.	£709	10	4

PREVALENCE OF SICKNESS, 1894.

Cholera—Choleraic Diarrhœa.

In July the following Memorandum was received from the Local Government Board:—

CHOLERA—NOTIFICATION OF DIARRHŒA.

Local Government Board,
Whitehall, S.W.
16*th July*, 1894.

Sir,

I am directed by the Local Government Board, to state that Cholera, from which certain parts of Europe have never been entirely free since the summer of 1892, again shows some signs of recrudescence on the Continent. In the late summer and autumn months of 1892 and 1893, the disease reached our shores. In 1892 it failed to extend to any persons, beyond those arriving in our midst from abroad; but last year it led to a number of localised outbreaks, which, happily, were of trivial extent compared with previous Cholera visitations to this country.

In those localities where Cholera made some headway, it was found that there had been antecedent Diarrhœa, generally quite excessive in amount, often Choleraic in type; the existence of this unusual Diarrhœa being only discovered where Diarrhœa was under section 7 of the Infectious disease (Notification) Act, 1889, added to the diseases notifiable under that statute. But notification of Diarrhœa was rarely, if ever, adopted until after the advent of Cholera, when the information to be derived from it could not be utilised to prevent that disease from gaining a foothold whilst in its least recognisable form.

Under these circumstances the Local Government Board, have thought it desirable to remind Sanitary Authorities that the utmost vigilance should be exercised within their respective districts, to control any Diarrhœa which may be suspicious, either in character, or in amount, during the present and forthcoming season. And with a view to facilitating action in this direction, the Board would give favourable consideration, to any applications that may be addressed to them, for their approval, to add Diarrhœa to the list of notifiable diseases, until the termination of the current quarter. In making any such application, each Sanitary Authority will doubtless consider how far it may be desirable, in the first instance at least, to limit notification of Diarrhœa to attacks occurring over one year of age.

I am, Sir,
Your obedient servant,
HUGH OWEN,
Secretary.

To THE CLERK TO THE BRISTOL
SANITARY AUTHORITY,

Your Committee had already during the autumn of 1893, made special arrangements for the immediate notification by telegram of suspicious cases of Cholera, or of Choleraic Diarrhœa, and it was judged sufficient to continue the arrangement during the autumn of 1894.

No cases of Cholera, or of Choleraic Diarrhœa in the City, came under notice during the year.

Small Pox in Bristol—1893-94.

No. of Marks.	CASES. 0–10 Mild	0–10 Severe	10–15 Mild	10–15 Severe	15–30 Mild	15–30 Severe	30 + Mild	30 + Severe	Total Cases. Mild	Total Cases. Severe	DEATHS. 0–10	10–15	15–30	30 +	Total Deaths.	%
1	4	—	4	—	16	6	11	5	**35**	**11**	— —	— —	— -	— —		0
2	1	--	11	1	48	7	22	12	**82**	**20**	—	1	1	7	**9**	8·9
3	—	—	6	—	36	7	19	12	**61**	**19**	—	—	—	8	**8**	10
4	2	—	3	—	45	4	4	2	**54**	**6**	—	—	1	1	**2**	3·3
Unvaccinated.	7	16	1	3	2	8	—	4	**10**	**31**	6	—	2	3	**11**	26·8
Stated to be Vaccinated but no Marks.	—	—	—	—	—	2	2	3	**2**	**5**	—	—	2	1	**3**	—
No. Information No. Marks.	—	—	—	—	—	—	—	2	—	**2**	—	—	—	2	**2**	—
Revaccinated. previous to Contraction.	—	—	—	—	6	—	6	3	**12**	**3**	—	—	—	1	**1**	6·6
Previous Small Pox. Unvaccinated	-	—	—	—	—	—	2	2	**2**	**2**	—	—	—	—	—	—
Previous Small Pox. Vaccinated	—	—	—	—	1	—	2	—	**3**	—	—	—	—	—	—	—
Totals	**14**	**16**	**25**	**4**	**154**	**34**	**68**	**45**	**261**	**99**	**6**	**1**	**6**	**23**	**36**	**10**
	30		**29**		**188**		**113**		**360**							

City of Bristol.

Small-Pox—1887-88 and 1893-94.

687 Cases—614 Recoveries—73 Deaths.

Degree of Vaccination.	Under 15 years of age.				Over 15 years of age.			
	Total Cases.	Recovered.	Died.	Fatality.	Total Cases.	Recovered.	Died.	Fatality.
Unvaccinated or Doubtful ...	49	31	18	36·7	60	36	24	40·0
1 Vaccination Mark	21	21	0	—	106	99	7	6·6
2 Vaccination Marks ..	32	31	1	3·1	168	159	9	5·3
3 Vaccination Marks ...	20	20	0	—	113	105	8	7·0
4 Marks and Revaccinated	23	23	0	—	95	89	6	6·3

The full Report on the Small-Pox Epidemic of 1893–94, will be issued as a Supplementary Report.

Diarrhœa.—Infantile Diarrhœa.

The number of deaths returned as due to Diarrhœal Diseases during the year was 65, of which 43 were of infants under 1 year, 7 of children between 1 and 5, 1 of a child between 5 and 15, 2 of persons between 25 and 60, and 12 of persons aged 60 and upwards.

The figures for the year are considerably lower than those for 1893 (124), but last year showed unusual Diarrhœa prevalence in many parts of England. This year's figures are below the average annual Diarrhœal mortality for the preceding decennium—which was 103—the mild and damp summer and autumn no doubt contributed to this favourable result.

The deaths by quarters occurred thus:—

1st Quarter	13
2nd „	8
3rd „	26
4th „	18

Diphtheria. Membranous Croup.

During the 52 weeks of 1894, 118 cases were notified as Diphtheria, and 11 as Membranous Croup, a total of 129 under these two headings, as compared with 142 during the previous year.

The number of deaths returned from both causes was 50 compared with 53, 38 and 16 during the three previous years. The local incidence of this disease, as well as the case mortality in the sub-districts in the City are shewn in the following table :—

DIPHTHERIA, MEMBRANOUS CROUP.

Sub-Districts	Redcliff.	Castle Precincts	St. Paul.	St. James.	St. Augustine	Bedminster.	Clifton.	Ashley.	St. Philip.	Westbury.	Public Inst.	Bristol - City.
Population ...	9,197	5,252	19,166	7,648	13,707	48,023	29,559	25,715	52,064	16,247		226,578
Cases notified	3	4	14	2	2	30	10	21	26	8	8	128
Incidence rate of attacks per 1000 population	·32	·76	·73	·26	·14	·62	·33	·81	·49	·49	—	·56
Deaths ...	0	2	7	1	1	15	2	6	10	1	5	50
Percentage of deaths to cases (case mortality).	0	50	50	50	50	50	20	28	38·4	12	—	39·0

From this table it appears that 50 deaths occurred from Diphtheria and Membranous Croup amongst 128 notified cases in the whole City, giving a case mortality of 39·0 per cent, and a death rate from these causes of 0·22 per 1,000 living. The number of deaths in this year shows a decrease from the Diphtheria mortality of last year, which corresponded to a rate of ·28, but it is still considerably in excess of the average rate for the past 10 years, which was ·11.

It compares however, favourably with the rate in the 33 great towns for 1894, which was 0·38.

The number of deaths returned as due to Diphtheria, in Bristol during the fourteen years 1881—94, are here shown:

together with the death rate from this cause for the same series of years in Bristol and in the 33 great towns:—

	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894
No of Deaths	10	8	13	19	25	28	23	26	15	16	16	38	53	50
Population	207,229	208,007	209,522	211,048	212,586	214,134	215,694	217,266	218,848	220,442	222,049	223,592	225,146	226,578
Annual death rate per 1000 living–Bristol	0·04	0·03	0·06	0·09	0·11	0·13	0·10	0·11	0·06	0·07	0·07	0·16	0·23	0·22
33 Great Towns	0·14	0·10	0·16	0·17	0·17	0·16	0·18	0·21	0·26	0·24	0·21	0·27	0·43	0·38

The tendency shown by Diphtheria of late years to increase as a cause of sickness and mortality in the large Urban Districts of England and Wales, is unfortunately now shared by Bristol. The notified cases, which rose from 70 in 1891 to 106 in 1892, showed a further increase in 1893 to 141, and this year numbered 128: while the deaths, which numbered 16 in 1891, rose to 38 in 1892 and 53 in 1893; and numbered 50 in this year. The heaviest incidence of the disease fell this year upon the sub-district of Ashley; Castle Precincts, St. Paul, and Bedminster also showed a rate above that for the City as a whole. While the total deaths recorded in the City were three less than in 1893; the case Mortality rose from 37·5 to 39·0.

In 12 houses multiple cases of Diphtheria occurred; seven houses had 2 cases, four houses had 3, and one had 4.

The somewhat large number of 8 cases was admitted into Public Institutions for treatment from outside the City.

Nineteen houses, in which Diphtheria occurred, were found to have foul or defective closets or drains, and these conditions were duly rectified. No widespread outbreak traceable to any common cause, school association, or other conditions occurred during the year, and the cases were distributed through the months as follows :—

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Cases	8	13	14	11	3	8	7	5	17	14	13	15
Deaths	4	4	6	2	0	3	5	2	7	6	6	5

Erysipelas.

During the year 154 cases of Erysipelas were notified and 8 deaths were returned : compared with 230 cases and 11 deaths in 1893.

The enquiries made into these cases have resulted in the discovery of 18 houses where various sanitary defects required attention ; but I am still unable to attach any special value to the notification of Erysipelas, and consider that it might conveniently be omitted from the list of notifiable diseases.

Scarlet Fever or Scarlatina.

The number of cases of this disease notified and confirmed during the 52 weeks of 1894 was 485 compared with 1,245 in 1893, with 1,442 in 1892, and with 888 cases in 1891 ; and the number of deaths returned was 16, compared with 35 in 1893, with 47 in 1892, and with 37 in 1891.

The percentage of deaths to cases in the whole City was 3·2 compared with a case mortality of 2·8 in 1893, of 3·2 in 1892, and of 4·1 in 1891. The distribution of attacks by age was as follows :—

Under 5 years	...	...	176
5-10 ,,	...	...	173
10-15 ,,	...	...	71
15 upwards	...	...	65
		Total	485

This table shows the incidence rate of the disease upon the registration sub-districts, and the percentage of deaths to cases in each sub-district and in the whole City.

Scarlet Fever.

Sub-Districts	Redcliff.	CastlePrecincts	St. Paul.	St. James.	St. Augustine	Bedminster.	Clifton.	Ashley.	St. Philip.	Westbury.	Public Inst.	City.
Population ...	9,197	5,252	19,166	7,648	13,707	48,023	29,559	25,715	52,064	16,247		226,578
Cases Notified	13	7	55	19	15	65	54	67	146	35	9	485
Incidence rate of attacks per 1000 population	1·4	1·3	2·8	2·4	1·0	1·3	1·8	2·6	2·8	2·1		2·1
Deaths ..	0	1	1	1	1	2	2	1	3	1	3	16
Percentage of deaths to cases (case mortality).	0	14·2	1·8	5·2	6·6	3·0	3·7	1·4	2·0	2·8	...	3·2

The heaviest incidence of the disease was upon the sub-districts of St. Paul, St. Philip, Ashley and St. James.

Eight cases were admitted to Public Institutions from outside the Borough.

The notification figures for the four quarters are as follow:—

1st quarter	... ...	175
2nd „	... ...	122
3rd „	... ...	106
4th „	... ...	82
	Total	485

No widespread extension has been traced during the year to schools, or to milk comtamination; but in every case notified, the attendance of school children from infected houses has been controlled until after recovery of the patient and disinfection of the premises.

The number of cases of Scarlet Fever isolated in the Sanitary Authority's Hospitals during the year has been 122; 12 were removed by the Guardians, and 6 were admitted into the Children's Hospital isolation wards.

Typhus Fever.

No case of Typhus Fever was reported in the City during the year. The last known cases of this disease occurred in the winter of 1889-90, the disease was strictly localised to a small group of houses, and resulted in 5 cases and 1 death. *(See Report for 1889).*

Enteric Fever.

During the year 90 cases were Notified as Enteric Fever, compared with 122 cases during 1893.

The number of cases shows a decrease upon the previous 4 years, as will be seen from the following table:—

	Cases notified.	Deaths.
1890	122	33
1891	116	23
1892	135	18
1893	122	26
1894	90	21

The yearly deaths for the past 10 years in the City have averaged 27·4, so that the year's mortality is below the average, though still in excess of the low years 1892 and 1885, when only 18 and 16 deaths were respectively returned.

The prevalence and fatality of the disease in each quarter of the year is shown here.

	Cases.	Deaths.
1st Quarter	25	10
2nd Quarter	14	2
3rd Quarter	15	3
4th Quarter	36	6
	90	21

This table shows the cases of Enteric Fever notified in each sub-district, as well as the attack rate per 1,000 population, and the case mortality :--

Enteric Fever.

Sub-Districts	Redcliff.	Castle Precincts.	St. Paul.	St. James.	St. Augustine.	Bedminster.	Clifton.	Ashley.	St. Philip.	Westbury.	Publ. Inst.	Bristol City.
Population ...	9,197	5,252	19,166	7,648	13,707	48,023	29,559	25,715	52,064	16,247		226,578
Cases notified	5	4	5	6	8	27	6	9	13	3	4	90
Incidence rate of attacks per 1000 population ..	·54	·76	·26	·78	·58	·56	·20	·35	·24	·18	..	·39
Deaths . .	0	1	0	1	0	5	1	2	6	1	4	21
Percentage of deaths to cases (case mortality.)	0	25	0	16·6	0	18·5	16·6	22·2	46·1	33·3	...	23·3

Enteric Fever is at present admitted into the Public Institutions and into the Guardians' Hospitals for treatment, and 35 cases were nursed in these institutions during the year. There are at present very few beds available for this disease in your Authority's hospitals, a deficiency shortly to be made good in the new hospitals.

The enquiries made into the sanitary condition of houses in which Enteric Fever appeared, disclosed 18 in which the drainage or other sanitary arrangements were defective and received attention.

As noticed in previous years, polluted water played but a very small part in the dissemination of the disease. In four cases pump or well water was in use at the affected houses; the water from these was analysed, and found to be impure, and steps were taken to secure the provision of a pure supply.

The cases occurring in the City were, as a whole, isolated ones, and no wide-spread epidemic at any time took place. In four instances, however, multiple attacks occurred in the same house, affecting 5, 2, 2, and 2 inmates respectively; in one of these, two cases of Diphtheria in the same house preceded by four weeks the first of the two cases of Enteric Fever.

In ten instances, persons sickened shortly after returning home from visits or voyages, during which, it appeared reasonable to the Medical attendant to suppose, they had contracted the disease.

Measles

The deaths from Measles numbered 116 compared with 25 last year, 105 in 1892, and 239 during 1891 the last epidemic year. The heaviest mortality from this disease occurred in the sub-districts of Bedminster (39) and St. Philip (35).

The deaths during the first quarter of the year numbered 17; 40 deaths were returned during the second quarter, 45 during the third quarter, and 14 during the last quarter of the year.

Of the 116 deaths, 107 were of children under 5.

It is a vexed question whether Measles should or should not be included amongst Notifiable Diseases. On the one hand its early infectivity and rapid spread appear to preclude the possibility of effectually controlling its epidemic prevalence by the usual means of Hospital isolation and Disinfection, while the enormous bulk of cases during any wide prevalence would render complete Hospital Isolation of all cases impossible without very ample ward accommodation On the other hand Measles is undoubtedly a regularly recurring cause of immense mortality, much of which might be prevented by careful nursing during the stage of convalescence; and, if many deaths are in this way preventable, it would appear to be a public duty to strive to do so.

On the whole, and with present available means of Isolation, the control of school attendance would appear to be the most hopeful method of procedure, and in this way heads of schools can most effectually further the efforts of your Authority by giving information of cases, and of families known to be affected. The time for Notification does not seem to be ripe in this City, until our Hospital accommodation is actually more commensurate with our requirements.

Whooping Cough.

The deaths from Whooping Cough numbered 177. compared with 80 in 1893, with 154 in 1892, 53 in 1891, and 201 in 1890.

Of the 177 deaths, 175 were of children under 5.

The heaviest mortality (101) occurred during the first quarter of the year; 57 deaths occurred during the second quarter, 17 during the third, and 2 during the last quarter.

The disease was most fatal in Bedminster (67), and St. Philip (42).

The mortality in this disease is largely due, as in the case of Measles, to the want of care exercised during the course of the disease, to avoid exposure to inclement wind and weather.

Influenza

This disease, caused 26 deaths during the year, compared with 68 in 1893 and 45 deaths during 1892 ; the figures being 18,4, 0 and 4, respectively for each of the four quarters.

Phthisis (Pulmonary Consumption).

The deaths from this disease form no inconsiderable proportion of the total deaths, and from year to year nearly approach the fatality of the seven principal Zymotics grouped together :—

	1887.	1888	1889.	1890.	1891.	1892.	1893	1894.
Phthisis ...	332	333	326	413	382	372	363	332
Seven Principal Zymotics	664	292	500	482	426	461	363	457

There appears to be no valid reason for the continued existence of this fatal scourge in anything like its present proportions, if to the medical treatment of its symptoms and results, were added some intelligent preventive treatment on the part of the patient.

Isolation in hospital, with the precautions as to exposure and disinfection, are certainly not applicable in the circumstances of Pulmonary Consumption, but *Notification* of the disease might reasonably tend towards the universal adoption of such precautions as are indicated below, and would ensure the periodical and thorough disinfection of infected rooms and houses, especially after death, a point of no little importance in the social history of the disease.

Rules for preventing the Spread of Consumption.

Pulmonary Tuberculosis (Consumption) is directly communicable from one person to another. The germ of the disease exists in the expectoration of persons afflicted with it.

Tuberculosis is commonly produced in the lungs (which are the organs most frequently affected) by breathing air in which living germs are suspended as dust.

It may also be contracted by the use of meat or milk from Tuberculous animals.

The material which is coughed up sometimes in large quantities by persons suffering from Consumption, contains these germs often in enormous numbers. This material when expectorated frequently lodges in places where it dries, as in the streets, on floors, carpets, handkerchiefs, &c. After drying in one way or another it is very apt to become pulverised and float in the air as dust. By observing the following rules the danger of catching the disease will be reduced to a minimum :—

1.—Do not permit persons suspected to have Consumption to spit on the floor, or on clothes, unless the latter be immediately burnt. The spittle of persons suspected to have Consumption should be caught in earthen or glass dishes containing the following solution :—

Corrosive sublimate	1 part.
Water	1,000 parts.

2.—Do not sleep in a room occupied by a person suspected of having Consumption. The living rooms of consumptive patients should have as little furniture as practicable—hangings should be especially avoided. The use of carpets, rugs, &c., ought always to be avoided.

3.—Do not fail to wash thoroughly the eating utensils of a person suspected of having Consumption, as soon after eating as possible, using boiling water for the purpose.

4.—Do not mingle the unwashed clothing of consumptive patients with similar clothing of other persons.

5.—Do not fail to catch the bowel discharges of consumptive patients with diarrhœa, in a vessel containing Corrosive sublimate 1 part, water 1,000 parts.

6.—Do not fail to consult the family physician concerning the social relations of persons suffering from suspected Consumption.

7.—Do not permit mothers suspected of Consumption to nurse their offspring.

8.—Household pets (animals or birds) are quite susceptible to Tuberculosis; therefore do not expose them to persons afflicted with Consumption; also do not keep, but destroy at once, all household pets suspected of having Consumption, otherwise they may give it to human beings.

9.—Do not fail to cleanse thoroughly the floors, walls and ceilings of the living and sleeping rooms of persons suffering from Consumption, at least once in two weeks.

10.—It is necessary to boil all cow's milk before use, especially by children, as it is practically certain that consumption in children is frequently caused by the use of raw milk from Tuberculous cows.

11.—The lungs should be protected from injury such as arises from damp and over-crowded dwellings, and from dusty occupations.

12.—The frequenting of public assemblies by persons suffering from Consumption is not advisable.

13.—Disinfection should be thoroughly and completely carried out in every house where a death from Consumption has occurred.

I am, Gentlemen,

Your Obedient Servant,

D. S. DAVIES,

Medical Officer of Health.

Table B. Showing population, Births, Marriages, and Deaths, and Birth and Death Rates, in Bristol, for the 18 Years, 1877-1894. (All figures revised on 1891 Census.)

	Estimated Population.	Registered Births.	*Marriages in the District of the Bristol Union.	Deaths.					Annual Rates.			
				Total Deaths at all Ages.	Under 1 Year.	Over 1 and under 5.	Over 60.	In Public Institutions.	Birth Rate per 1000.	Death Rate per 1000.	Infantile Mortality to 1000 Births.	Zymotic Rate.
1877	197,395	7,295	1,199	4,415	1,120	785	990	653	36·9	22·3	153·5	3·3
1878	199,879	7,236	1,159	4,409	1,145	605	1,121	631	36·2	22·0	158·2	2·0
1879	202,400	7,644	1,115	4,496	1,112	715	1,163	607	37·7	22·2	145·4	2·2
1880	204,942	7,193	1,195	4,276	1,040	759	1,036	661	35·1	20·8	144·5	3·0
1881	207,229	7,121	1,103	4,050	900	608	1,084	650	33·8	19·5	126·3	2·2
1882	208,007	6,935	1,107	4,019	988	589	1,045	624	33·3	19·3	142·0	2·3
1883	209,522	6,844	1,073	3,795	917	405	1,057	608	32·6	18·1	133·9	1·1
1884	211,048	6,888	1,090	4,023	1,001	538	1,061	653	32·6	19·0	145·3	1·8
1885	212,586	6,786	974	4,281	1,052	639	1,134	629	31·9	20·1	155·0	2·2
1886	214,134	6,724	949	4,253	1,002	619	1,132	694	31·4	19·8	149·1	2·2
1887	215,694	6,619	956	4,542	996	796	1,244	680	30·6	21·0	150·4	3·0
1888	217,266	6,608	981	3,816	824	432	1,138	710	30·4	17·5	124·6	1·3
1889	218,848	6,694	932	4,021	976	595	1,062	660	30·5	18·3	145·8	2·2
1890	220,442	6,634	1,033	4,532	991	597	1,265	730	30·0	20·5	149·4	2·1
1891	222,049	6,725	937	4,631	972	603	1,371	815	30·3	20·8	144·5	1·7
1892	223,592	6,563	973	4,331	953	634	1,197	776	29·3	19·3	145·2	2·0
1893	225,028	6.788	955	4,241	959	411	1,283	851	30·1	18·8	141·2	1·6
1894	**226,578**	**6,393**	**920**	**3,888**	**948**	**524**	**1,077**	**769**	**28·8**	**17·1**	**148·3**	**2·0**

* This includes the Registration Sub-Districts of St. Mary Redcliff, Castle Precincts, St. Paul, St. James, and St. Augustine only.

Table C. Showing Number of Deaths from Zymotic Diseases in Bristol, during the 19 years, 1876—1894.

	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894
Small Pox ...	23	...	...	...	1	...	...	...	...	10	8	13	26	...	...	1†	...	20‡	16 ×
Diphtheria ...	11	4	5	4	6	10	8	13	19	25	28	23	26	15	16	16	38	53	50
Erysipelas ..	14	17	12	13	10	18	14	10	11	10	11	10	21	16	9	12	21	11	8
Scarlet Fever ...	286	45	36	92	244	153	75	33	37	21	89	217	45	26	40	37	47	35	16
Typhus	5	31	2	...	...	7	10	1	2	...	...	...	...	...	1	...	...	...	...
Enteric Fever ...	84	101	89	42	39	52	38	29	40	16	29	23	28	38	33	23	18	26	21
Puerperal Fever* ...	..	...	...	...	...	...	...	..	18	12	8	9	17	11	12	7	25	16	11
Measles	77	133	53	74	73	120	54	33	46	159	101	147	61	185	92	239	105	25	116
Whooping Cough ...	47	239	66	174	95	38	196	38	99	149	101	124	38	105	201	53	154	80	177
Diarrhœa... ...	209	117	171	70	184	82	104	83	132	89	119	117	68	131	96	58	99	125	65

* Previous to 1884, Puerperal Fever was not separated in the Local returns from Puerperal Diseases generally.

† This death occurred in the Nover's Hill Hospital outside the City, and so did not appear in the General Returns.

‡ Of these deaths one occurred in the Nover's Hill Hospital, outside the City, and so did not appear in the General Returns.

× Of these deaths five occurred in the Nover's Hill Hospital, outside the City, and so did not appear in the General Returns.

D. City of Bristol.

Table Showing Deaths from Specified Causes at all Ages and at Six Groups of Ages, during the Year 1894.

Classes.	Causes of Death.	Deaths at certain Age Groups.						All Ages.			Rate per 1000 Living.
		0 to 1	1 to 5	5 to 15	15 to 25	25 to 60	60 upwards.	M.	F.	Total.	
	All Causes	948	524	156	180	1003	1077	1969	1919	3888	17·16
I.	Small Pox — Vaccinated	...	...	...	1	7	...	5	3	8	0·04
	Small Pox — Un-Vaccinated ...		...	...	...	2	1	2	1	3	
	Small Pox — No Statement ...	...	..	...	...	..	...	...	...	...	
	Scarlet Fever	1	12	3	...	...	...	7	9	16	0·07
	Diphtheria	6	22	15	2	...	...	25	20	45	0·19
	Membranous Croup	2	3		...	...	...	3	2	5	0·02
	Typhus Fever	...	..	...	...	...	...	...	...	...	
	Enteric or Typhoid Fever	...	3	1	...	7	10	11	10	21	0·09
	Continued Fever, Ill-defined Fever	...	...	...	...	..	...	...	...	...	
	Relapsing Fever	...	...	...	..	..	...	...	...	...	
	Puerperal Fever	...	..	...	...	11	...	...	11	11	
	Cholera (Asiatic)	...	...	...	...	...	...	...	...	...	
	Erysipelas	1	...	...	...	3	4	5	3	8	0·03
	Measles	32	75	7	1	1	...	59	57	116	0·51
	Whooping Cough	78	97	2	...	...	.	95	82	177	0·78
	Influenza	4	...	...	4	8	10	9	17	26	0·11
	Simple Cholera, Chol: Diarrhœa	.	..	...	...	...	...	...	...	...	
	Diarrhœa, Dysentery	43	7	1	..	2	12	37	28	65	0·28
	Venereal Affections	23	3	...	...	2	1	18	11	29	0·12
	Pyæmia	...	1	...	...	..	...	1	...	1	
	Cow Pox, Effects of Vaccination ..	...	1	...	1	...	...	1	1	2	
	Other Spec: Feb: or Zymotic Dis.	2	...	...	1	...	...	2	1	3	
II.	Parasitic Diseases	...	...	...	...	...	...	...	...	...	
III.	Dietic Diseases, Alcoholism . .	1	...	...	...	6	2	6	3	9	
IV.	Rheumatic Fever	...	...	5	1	4	1	8	4	12	
	Rickets	1	1	...	...	...	..	...	2	2	
	Cancer, Malignant Disease ...	1	1	...	3	100	78	68	115	183	0·8
	Tabes Mesenterica	19	7	4	1	...	...	17	14	31	
	Tubercular Meningitis, Hydrocephalus	11	17	12	3	...	. .	20	23	43	
	Phthisis Pulmonalis	4	9	20	61	220	18	175	157	332	1·4
	Scrofula, Tuberculosis	10	12	13	9	18	...	22	40	62	
	Other Constitutional Diseases ...		4	1	...	8	12	11	14	25	
V.	Premature Birth	119	...	...	...	...	...	65	51	119	
	Congenital Malformations	14	...	...	...	...	...	9	5	14	
	Old Age	...	...	.	...	1	207	82	126	208	0·91
VI.	Inflam: of Brain and Membranes	7	10	6	1	8	...	14	18	32	
	Apoplexy, Paralysis	..	2	...	1	82	143	123	105	228	2·1
	Epilepsy	...	1	1	4	15	5	10	16	26	
	Convulsions	108	15	1	..	...	..	67	57	124	
	Other Diseases of Nervous System	12	4	5	5	21	33	39	41	80	
	Diseases of Heart and Circulation	7	3	12	28	129	150	168	161	329	1·4
	Croup		1	...	...	...	...	...	1	1	3·2
	Bronchitis	135	56		3	54	160	212	196	408	
	Pneumonia	87	85	10	8	50	41	157	124	281	
	Other Respiratory Diseases ...	6	7	4	3	14	10	29	15	44	
	Dentition	20	7	..	...	...	..	17	10	27	1·0
	Dis: of Stomach and Intestines, Peritonitis	28	6	9	8	45	40	59	77	136	
	Cirrhosis and other Dis: of Liver	7	2	..	..	29	18	26	30	56	
	Other Diseases of Digestive System	6	2	..	1	4	4	9	8	17	
	Diseases of Urinary Organs ...	2	5	6	6	44	45	68	40	108	0·4
	Diseases of Reproductive Organs ...	...	.	...	3	14	4	...	21	21	
	Other Local Diseases	6	3	4	10	21	11	18	37	55	
VII.	Accident, Negligence	6	16	13	8	41	28	72	40	112	0·5
	Suffocation	2	...		...	...	...	1	1	2	
	Homicide	...	..	...	2		...	2	...	2	
	Suicide	..	...	..	...	6	4	5	5	10	
	Execution	...	...	...	..	...	. .	...	...	...	
VIII.	Marasmus, Atrophy, Debility ...	115	20	..	...	12	8	83	72	155	0·94
	Other Ill-defined Causes	22	4	1	...	14	17	27	31	58	

Infectious Disease (Notification) Act, 1889.

Notifications received in each week of 1894.

(UNCORRECTED, AS RECEIVED.)

Weeks.	TOTAL.	Small Pox.	Choleraic Diarrhoea.	Diphtheria.	Membranous Croup.	Erysipelas.	Scarlet Fever.	Typhus Fever.	Enteric Fever.	Continued Fever	Puerperal Fever.
1	27	6			1	4	15		1		
2	52	36		1		2	12				1
3	51	23		2			25				1
4	38	15		4		2	13		1		3
5	48	19				3	25		1		
6	45	18		3	1	4	15		2		2
7	29	4		5		2	14		4		
8	29	11		4		3	9		2		
9	32	13					14		4		1
10	45	17		3	2	4	14		5		
11	23	5		3		3	9		2		1
12	25	10		4	1	2	5		2		1
13	17	8		1			7		1		
14	20	4		3		5	7		1		
15	36	1		5		5	23		2		
16	26	1		3		5	17				
17	14			1		1	11		1		
18	12					4	6		2		
19	18	2				5	9		1		1
20	14			1		5	7		1		
21	16					5	11				
22	13	1		1		3	8				
23	9			2		2	4		1		
24	18	1		4		4	8		1		
25	21			2		6	10		3		
26	6	1				2	2		1		
27	17	1		2		3	10		1		
28	10	1		1		4	4				
29	8	3		1		1	2		1		
30	13			3		4	4		1		1
31	10			1		3	6				
32	13			1			11				1
33	20			1		5	10		3		1
34	11			1		2	4		3	1	
35	23			1		5	13		4		
36	12			2			10				
37	17			3		2	11				1
38	24			11		3	10				
39	19			1		4	12		2		
40	14			4	1	3	6				
41	13			1		1	9		2		
42	11			1	1		7		1		1
43	21			4	2	4	8		2		1
44	18			1		4	10		3		
45	17			2		4	7		4		
46	15			5	1	2	5		2		
47	16			3		3	7		3		
48	16				1	3	3		8		1
49	21			5		1	8		7		
50	12			5		3	2		2		
51	17			3		4	8		2		
52	11			3		5	3				
	1083	201		118	11	154	490		90	1	18

Infectious Disease (Notification Act,) 1889.

1894 Notifications received during each Quarter of 1894.

Table A. (UNCORRECTED, AS RECEIVED)

NOTIFIABLE DISEASE.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.	Totals of each Disease.
Small Pox	185	11	5	...	**201**
Choleraic Diarrhœa ...	...	...	...	...	...
Diphtheria	30	22	29	37	**118**
Membranous Croup ...	5	...	...	6	**11**
Erysipelas	29	52	36	37	**154**
Scarlet Fever or Scarlatina	177	123	107	83	**490**
Typhus Fever ...	...	...	...	...	...
Enteric or Typhoid Fever	25	14	15	36	**90**
Relapsing Fever ...	...	...	...	...	...
Continued Fever ...	...	...	1	...	**1**
Puerperal Fever ...	10	1	4	3	**18**
Totals in each Quarter	**461**	**223**	**197**	**202**	**1083**

Table B. Notification and Deaths registered by Sub-Districts during the year 1894.

(CORRECTED.)

	Small Pox.		Choleraic Diarrhœa		Diphtheria,		Membranous Croup.		Erysipelas.		Scarlet Fever		TYPHUS.	ENTERIC TYPHOID		Relapsing.	Continued		PUERPERAL.		Total cases in each Sub-District.
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		Cases	Deaths		Cases	Deaths	Cases	Deaths	
St. Mary Redcliff ..	7				3				11		13			5							39
Castle Precincts ...	2				3	**2**	1		7		7	**1**		4	**1**						24
St. Paul	33	**1**			13	**6**	1	**1**	14	**1**	55	**1**		5					1	**1**	122
St. James	2				2	**1**			7		19	**1**		6	**1**						36
St. Augustine	6	**1**			2	**1**			8	**1**	15	**1**		8							39
Bedminster	43	**1**			25	**12**	5	**3**	35	**1**	65	**2**		27	**5**		1		9	**4**	210
Clifton	8				9	**2**	1		9	**1**	54	**2**		6	**1**				1	**1**	88
Ashley	14	**2**			20	**5**	1	**1**	15		67	**1**		9	**2**				1	**1**	127
St. Philip	81	**2**			25	**10**	1		42	**1**	146	**3**		13	**6**				6	**4**	314
Westbury	2				8	**1**			5	**1**	35	**1**		3	**1**						53
Admitted to Public Insts. from outside of Borough		**1**			8	**5**					8	**2**		3	**2**						19
Extra Municipal Insts. ...	3	**3**							1	**2**	1	**1**		1	**2**						6
Total cases of each disease	201				118		10		154		485			90			1		18		1077
Total deaths from each disease		**11**				**45**		**5**		**8**		**16**			**21**			**0**		**11**	
Percentage of deaths to known cases .	5·4				38·1		50·0		5·1		3·2			23·3			0		61·1		

This Table has been corrected as follows:—

One case notified as Diphtheria, and five notified as Scarlet Fever, proved subsequently not to be cases of those diseases.

Table C.

NOTIFICATION.

Particulars as to removal and Disinfection in all Cases Notified during the Year 1894

	Small Pox.	Choleraic Diarrhœa.	Diphtheria.	Membranous Croup.	Erysipelas.	Scarlatina or Scarlet Fever.	The Fevers known by the following names:—					TOTALS.
							Typhus.	Typhoid Enteric.	Relapsing	Continued	Puerperal	
Cases removed to Hospital, Infirmary, or Children's Hospital	...	...	30	3	1	6	...	32	...	1	...	**73**
Cases removed to Sanitary Authority's Hospitals	178	...	...	...	...	122	..	..	...	..	...	**290**
Cases removed by Guardians	10	...	...	...	2	12	..	3	...	..	...	**27**
Total cases nursed at Home	13	..	88	7	151	345	..	55	...	...	18	**687**
Total cases known or notified ...	**201**	**0**	**118**	**10**	**154**	**485**	**0**	**90**	**0**	**1**	**18**	**1077**
Cases in which disinfection of bedding, clothing, and rooms has been carried out, and necessary precautions taken under the supervision of District Inspector	200	...	69	8	8	480	...	81	...	1	18	**865**
Cases in which disinfection was carried out to the satisfaction of Medical Attendant or in which Disinfection was unnecessary	1	...	49	2	146	5	..	9	...	...	...	**212**

COMPARATIVE TABLE—Showing the Estimated Population, Density, Birth-rate, Death-rate, Zymotic-rate, Fever Death Rate, Diarrhœa Death Rate, and Infantile Death Rate of the 13 LARGEST TOWNS OF ENGLAND AND WALES (those having a population of over 200,000); also of EDINBURGH, GLASGOW, DUBLIN, and CARDIFF, for the Year 1894, compared with the same particulars and rates for the group of 33 large towns. *From the Registrar General's Return.*

	Estimated Population, middle of 1894.*	Persons to an acre.	Birth-rate.	Death-rate.	Zymotic-rate.	Fever Death-rate.	Diarrhœa Death-rate	Deaths under 1 year to 1000 Births.
33 Large Towns	10,458,442	34·9	30·7	18·1	2·44	0·19	0·51	152
London	4,349 166	58·2	30·1	17·8	2·66	0·15	0·42	143
Manchester ...	520,211	40·3	32·0	20·4	2·38	0·19	0·67	160
Liverpool ...	507,230	97·3	35·4	23·8	3·41	0·59	1·00	179
Birmingham ...	492,301	38·7	31·7	18·6	2·50	0·22	0·52	163
Leeds	388,761	18·0	32·2	17·9	2·00	0·13	0·45	155
Sheffield... ...	338,316	17·2	33·4	17·8	2·27	0·19	0·56	157
West Ham ...	238,184	50·6	34·0	16·2	3·19	0·19	0·45	138
Bristol ...	**226,578**	**50·8**	**28·2**	**17·3**	**2·04**	**0·10**	**0·31**	**150**
Bradford ...	223,985	20·8	26·7	17·0	1·76	0·13	0·30	145
Nottingham ...	223,584	20·4	28·6	17·2	2·33	0·28	0·60	174
Hull	212,679	25·9	32·4	17·4	1·76	0 19	0·43	142
Salford	205,828	39·8	34·3	21·0	3·25	0·31	0·68	174
Newcastle ...	201,947	37 6	31·0	18·3	2·16	0·13	0·49	157
Edinburgh ...	270,588	43·53	26·6	17·5	1·8	0·1	0·3	123
Glasgow... ...	686,820	—	32·9	19·8	2·6	0·2	0·5	129
Dublin	349,594	14·2	28·4	24·8	2·1	0·4	0·5	149
Cardiff	148,890	24·6	34·4	16·2	1·94	0·05	0·47	141

* These Populations are based on the 1891 Census returns.

Comparative Mortality in the Great Towns.

England and Wales, 1894.

The Annual Birth-Rate in the 33 Great towns of England and Wales was 30·7 per 1,000 living; the rate in London was 30·1, and that for **Bristol 28·2**.

The General Death-Rate recorded for the 33 great towns averaged 18·1; ranging from 13·2 in Croydon, and 14·7 in Leicester, to 21·0 in Salford, and 23·8 in Liverpool. The rate in **Bristol** was **17·3**

In 67 other large town districts the rate was 16·0.

The Infant Mortality in the 33 great towns showed a mean proportion of 152 per 1,000 births, as compared with an average rate of 166 in the 10 years immediately preceding. Infantile Mortality was lowest, (121) in Croydon, and next lowest, (123) in Derby, ranging up to 179 in Liverpool, and 217 in Preston. The rate of Infant Mortality in **Bristol** was **150.**

In the 33 great towns collectively, the death rates from *Small-Pox*, *Scarlet Fever*, *Whooping Cough*, *Fever*, and *Diarrhœa*, were in each case below the decennial average; but the mortality from *Diphtheria* was again considerably in excess, and that from *Measles* was slightly above the average.

There were 450 deaths in the 33 great towns from *Small-Pox*, of which 89 occurred in London, or in the Metropolitan Asylum Hospitals, outside the Metropolis; 49 in the neighbouring municipality of West Ham, 170 in Birmingham, 27 in Bradford, 23 in Manchester, 23 in Oldham, 20 in Liverpool, and **16* in Bristol**; the remaining 33 being distributed over 12 other towns. The highest death-rate from Small Pox, was in Birmingham.

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* In the City returns 11 Deaths on'y are referred to Small-Pox, the 5 other Deaths having occurred in a City Hospital situated in an outside Registration District.

The mortality from *Diphtheria* was equal to 0·38 per 1,000, as compared with 0·23, the average rate in the preceding 10 years.

The lowest rates were, 0·05 in Derby, 0·06 in Plymouth, and 0·07 in Leicester, in Preston, and in Sunderland; the rates in the other towns rising to 0·46 in Cardiff, 0·61 in London, and 0·80 in West Ham. During the preceding year (1893), the mortality from Diphtheria, had been excessive in these three towns. The Diphtheria rate in **Bristol** for 1894 was **0·21**

The mortality from *Continued Fevers* which had been equal to 0·24 per 1,000 in the previous year, fell to 0·19 in the year 1894, and was 0·03 below the decennial average. The rate did not exceed 0·05 per 1,000 in Cardiff, and 0·06 in Croydon, and in Halifax: whilst it ranged upwards to 0·59 in Liverpool, and 0·60 in Sunderland. The rate in **Bristol** was **0 10.**

The mortality from *Diarrhœa* was 0·51 per 1,000, against a decennial average of 0·91. The lowest rate from Diarrhœa was 0·04 in Halifax, (where also the *Fever* rate was very low,—0·06); the highest rates were 1·00 in Liverpool, and 1·42 in Preston. The Diarrhœa rate in **Bristol** was **0·31**.

The highest aggregate rates from the seven principal zymotic diseases, were, 3·19 in West Ham, 3·23 in Wolverhampton, 3·25 in Salford, and 3·41 in Liverpool.

Colonial and Foreign Cities—1894.

The Death-Rate in 37 of the principal Colonial and Foreign Cities, with an aggregate population of 22 millions, which furnish returns to the Registrar General, was 23·1 per 1,000 living.

In 32 European, American, and Australian Cities, with an aggregate population of 19 millions, the rate was 21·5 per 1,000. The lowest rates were 12·5 in Brisbane, 14·2 in

Sydney, 16·1 in St. Louis, 16·9 in The Hague, 18·0 in Hamburg, and 18·1 in Brussels. The rates in the other Cities, ranging upwards to 27·1 in Prague, 30·2 in Trieste, 31·4 in St. Petersburg, and 34·2 in Moscow.

In Paris the rate was 20·3, in Berlin 18·2, and in Vienna 22·8, compared with 17·8 in London.

Small-Pox caused 314 deaths in Rotterdam, 173 in Paris, 156 in New York, 104 in Moscow, 99 in St. Petersburg and 79 in Buda Pesth.

The mortality from *Diphtheria* was high in St. Petersburg, Moscow, Stockholm, Copenhagen, Christiania, and in most of the German, Austrian, and American Cities, from which returns are received; and that from *Fever* in New Orleans, St. Louis, Baltimore, Prague, and in Rome, (nearly half the deaths in Rome were due to *Malaria Fever*).

The mortality from *Diarrhœal diseases*, including *Cholera*, was especially high in St. Petersburg, Moscow, Breslau and Munich.

Amongst the Indian Cities, the highest death rate was 36·7 in Madras, that in Calcutta was 29·8, and in Bombay 33·3. *Small-Pox* caused 529 deaths in Bombay, 323 in Calcutta, and 12 in Madras. The mortality from *Fever* was as usual, excessive in all these Cities: and that from *Diarrhœal diseases* was high in Calcutta, and Madras.

In Cairo and Alexandria the death rates were respectively 52·0 and 40·6; these high rates being mainly attributable to excessive mortality from Diarrhœal diseases, which caused nearly one third of the total deaths in Cairo, and one fourth of these in Alexandria.

Small Pox Hospital—St. Philip's Marsh.

MEDICAL ATTENDANT'S REPORT FOR THE YEAR ENDING 29TH December, 1894.

Remaining from last year	28	139
Admitted from December 31st, 1893, to June 11th, 1894 (last case in)	111	
Discharged Cured	43	140
Discharged Convalescent to Convalescent Hospitals	90	
*Died	4	
Sent in as Small Pox, but proved not to be	2	
Born in Hospital	1	

Small Pox Hospital—Nover's Hill.

REPORT FOR THE YEAR ENDING 29TH DECEMBER, 1894.

Remaining from last year	9	82
Admitted from December 31st, to 18th July, 1894 (last case in)	73	
Discharged Cured	48	82
Discharged Convalescent to Convalescent Hospitals, Avonmouth	29	
*Died	5	

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* The remaining 7 deaths appearing in the Registrar General's returns, occurred either in the Workhouse Hospitals, or at home.

Clift House Temporary Hospital.

REPORT FOR THE YEAR ENDING DECEMBER 29TH, 1894.

Scarlet Fever.

Remaining from 1893	10	132
Admitted during the year 1894	122	
Discharged Cured	120	132
Died	2	
Remaining	6	
Admitted as Scarlet Fever, but proved not to be	4	

G. C. PAULI,

M.R.C.S., L.R.C.P.

Medical Attendant.

PART II.

Report of Inspector of Nuisances.

1894. PUBLIC HEALTH DEPARTMENT,

40 PRINCE STREET,

February, 1895.

To THE BRISTOL URBAN SANITARY COMMITTEE.

GENTLEMEN,

I beg to submit the following brief Report, with summaries, showing the number and nature of Nuisances abated during the past year, which, I trust, will receive your favourable consideration.

1,253 complaints and applications were received at the Office and duly attended to. 410, or over 32 per cent. of these complaints were found on investigation to refer to premises at which no Nuisance was found.

The enquiries into the surroundings of Infectious Disease have not been quite so numerous as last year, the number of cases notified being 1,077 in 1894, compared with 1,940 in 1893. These enquiries were made with so much tact and judgment, that very little, if any, friction was caused. 931 houses were disinfected during the year, against 1,815 the previous year, and the number of articles of bedding and clothing removed from these houses and disinfected in the Washington Lyons Steam Disinfector was 36,216, against 46,915 last year, a considerable and gratifying diminution. The Informal Notices for the abatement of Nuisances have as usual been generally successful, only 90 formal notices being required. The Nuisance prosecutions were about the average number, full particulars of which are appended, The Main Sewers, Courts, etc., received the usual attention, particularly during the summer and autumn months, sulphate of iron being freely used in all the Sewers, and carbolic powder and other disinfectants freely used in the courts and such like places, and distributed gratuitously wherever required.

Slaughter Houses have been constantly visited, and found in a generally clean condition ; and, considering their surroundings and structural condition, complaints against them have been very few. No new licenses were applied for or granted during the year. I hope the day is not far distant when Public Abattoirs will be established in Bristol.

Houses Let in Lodgings now number 341, an addition of 11 during the year. The number would have been greater but for a change in the constitution of the staff of Inspectors, in consequence of which there was no regular Inspector for these houses for four months.

Dairies, Cowsheds, and Milkshops were found in better condition than usual, the constant supervision to which they are subjected has kept the owners so well up to the mark, that the number of Nuisances found and abated under notice has decreased from 1,058, in 1893, to 810 this year, and these have chiefly arisen owing to the change of residence of many milk purveyors which is continually going on. Full particulars of the nature of the Nuisances abated are appended.

Factory and Workshops Acts.—Much good and necessary work has again been done under these Acts, as the appended table will show. The following extract from the Report of the Chief Inspector of Factories and Workshops has the value of an independent opinion upon our local administration of these Acts.

Extract from the Report of the Chief Inspector of Factories and Workshops for the year 1893, page 276.

" Mr. Maitland, H.M. Inspector for the Preston District, lately removed to the Bristol District, reports as follows :—

" The Preston District, as you are aware, embraces North " Lancashire, all Westmoreland and Cumberland, with part " of Yorkshire. I did not receive, during the whole time I " had charge of that District, a single written notice from " any Sanitary Authority, in accordance with Sec. 3, Fac- " tory Act, 1891, of workshops in which children, young " persons, or women, were employed. In some few towns " the Local Authorities appeared to have taken some feeble " steps with regard to the sanitation of workshops, but in " most towns in the District I never heard of anything " being done in the matter at all. In Bristol, where I now " am, a different state of things exists. I receive numbers " of written notices of workshops in which protected " persons are employed, and on every hand I find venti- " lation improved, new water-closets, etc., put in ; all the " work of the Sanitary Inspector of Workshops for this " city."

The Common Lodging Houses have been kept in satisfactory condition with but one exception, and in this case notice was served on the owner to carry out extensive external and internal repairs ; also on the registered Keeper of the house, to keep the house and beds clean in accordance with the requirements of the Bye Laws.

These notices were complied with, and the house is now in much better condition.

Only three cases of infectious disease were reported in these houses—two of scarlet fever and one of small pox, and in each case the measures of removal and disinfection adopted were successful in preventing any extension of the disease.

As the Small Pox epidemic did not in 1894 extend to these houses, it was not found necessary to make so many inspections, or to collect lists of lodgers daily as was done in the previous year.

Cholera Precautions.—Inspection of Courts, etc. These precautions have been continued by the men selected last year from the staff of labourers, who during the spring, summer, and autumn months visited 12,380 houses, finding only 248 Nuisances requiring the service of notice to abate, against 720 last year. It was, however, found that when they commenced their visits in a street or district, the news spread, and people began to put their houses in order by cleaning out dirty corners, removing offensive deposits, etc., so that considerably more good than is apparent was effected by these visits.

During the year two Inspectors, both good and qualified men, well up in their work, have left Bristol, after five years' service, one having secured an appointment as Assistant Inspector of Factories in London, and the other an Inspectorship under the London County Council. This caused an alteration in the staff arrangements, and the appointment of two new Inspectors. One post was, however, vacant four months. These removals and alterations no doubt caused some diminution in the number of Nuisances found and abated, as per table appended. The whole staff is now, however, in good working order, and will, I doubt not, give a good account of themselves during the current year.

JAMES W. KIRLEY,
Chief Inspector of Nuisances.

Summary of Nuisances abated and Work done by the District Inspectors, and by the Special Inspectors in the Health Department.

1894. STATEMENT PREPARED BY THE CHIEF INSPECTOR OF NUISANCES.

Number of Complaints received and attended to		1,253
Total number of visits and revisits in order to secure completion of work by the District Inspectors	33,098	47,898
Ditto ditto by the Special Inspectors	14,800	
Total number of Premises as to which Notices have been served, and enforcement secured in the various departments ...		4,164
Actual number of Nuisances so dealt with ..		7,649

Nuisances abated by the	District Inspectors	4,623
	Inspector of Slaughter Houses ...	68
	„ Common Lodging Houses	86
	„ Dairies, Milk Shops, &c.	810
	„ Houses let in Lodgings	1,404
	„ Factories and Workshops	644
	„ Bakehouses	14

PARTICULARS OF NUISANCES ABATED BY THE DISTRICT INSPECTORS—

House drains entirely relaid, trapped, and ventilated	404
House drains partially relaid, trapped, and ventilated	1,079
W.C.'s fitted with new pans, &c.	1,341
W.C.'s cleansed and amended	164
Dirty and dilapidated houses cleansed and repaired	391
Yards paved by owners	685
Offensive deposits removed	161
Cesspools abolished	29
Keeping of pigs and other animals prohibited	159
Overcrowding—cases of	24
Smoke nuisances	7
Offensive trades...	5
Other nuisances...	174
	4,623

Offensive Trades—

Number visited 83

Water Supply—

Polluted wells closed 27

Company's water supply provided to houses... 79

Smoke—

Observations taken 246

Drain Testing—

Number of times smoke test applied ... 979

Disinfection—

Houses disinfected after infectious disease ... 931

Articles of bedding and clothing disinfected ... 36,216

Articles burnt 58

Total number of infected articles dealt with 36,274

Visits to premises on notification of infectious disease 2,500

TABLE SHOWING NUMBER OF NUISANCES ABATED AND OTHER WORK DONE IN EACH YEAR SINCE 1884.

	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894
Number of Nuisances abated	1943	2167	2424	3101	3139	3672	5600	5101	7485	8403	7564
Polluted Wells closed	21	15	16	17	18	48	35	14	14	26	27
Houses supplied with Co.'s Water ...	27	35	27	29	36	113	68	24	37	223	79
Houses disinfected ...	131	132	215	541	403	264	558	879	1351	1815	931
Articles of bedding, &c., disinfected ...	3919	5580	7727	19563	23233	14462	20523	31112	36722	46959	36274

JAMES W. KIRLEY,

Chief Inspector of Nuisances.

INSPECTION OF MEAT AND FISH.

1894

Summary for the Year.

No. of visits paid to Slaughter Houses	916
" " Fish Markets	467
" " Wholesale Meat Markets, Union Street, Retail and other Markets	1,735
" " Meat and Fish Shops ...	3,423
" " Fish & Tripe Curing Premises	358
" " Cattle Market, Railway Stations, and Irish Boats ...	670
Total number of visits...	7,569
Revisits to see work carried out	85
Total ...	7,654

Cattle, Pigs, Meat, Fish, and Fruit destroyed.

Beasts		103 and 18 quarters Beef
Sheep		56
Pigs		26
Calves		
Meat from Butchers' premises ...	lbs.	287
Packages of Fish		445
" Vegetables		57
" Fruit		9
" Rabbits		80
5 cases of Bad Eggs		
78 cwt. of Pickled Pigs' Cheeks		
10 cwt. of Pickled Pork in Casks ...		
No. of Notices served during the year to abate nuisances, repair drains, provide proper tubs, and vessels, &c. All complied with ...		68

S. THOMAS,
Inspector of Meat and Fish.

Summary—Common Lodging House Inspection and Work done during the Year.

1894.

No. of Houses on Register.	Registered Rooms contained	Certified to Accommodate.
49	243	1,106

The Rooms contain 83 Double Beds (Separated.)
30 Single Beds for Women.
898 Single Beds for Men.

Notices given to secure Half-yearly Lime-washing	80	Notices complied with	86
Notice served to secure observation of Bye-Laws	1		
Notices to require necessary Repairs to Drains and Premises	5		
Notices served to require Application to be made for Registration	0		
Notices to give returns of lodgers admitted	0		
Total	86	Total	86

Total visits, inspecting as to fresh Applications, Measuring Rooms, serving Notices, affixing Room Tickets and copies of Bye-Laws, ordinary Inspections to secure observance of Bye-Laws, and to superintend repairs to Drains, &c., and making enquiries to see that Bye-Laws are complied with, and Night Visits, and making enquiries as to health of inmates, removal and disinfection 614

S. DIMOND,
Inspector.

Dairies, Cowsheds, and Milkshops.

1894. SUMMARY FOR THE YEAR.

Total number of Dairies, Cowsheds, and Milkshops on Register at end of last year	1,145
Total number registered during the year ...	114
	1,259
Total given up the sale of Milk and struck off ...	56
„ now registered	**1,203**
„ inspections made	998
„ re-visits to see work in progress ...	1,089

Particulars of Work secured.

Drains entirely relaid	56
„ partially relaid	64
W.C.'s fitted with new pans and traps ...	84
„ cleansed and repaired	68
„ provided with flushing appliances and water	20
Sinks and yard gratings trapped	115
Yards paved	42
Yards and kitchens lime washed (Milkshops)	90
Cesspool abolished	0
Pigs removed	19
Cowsheds cleansed, limewashed, drained, and ventilated	41
Stables at Milkshops drained and ventilated ...	10
Leaky roofs repaired	13
Deposits of manure, &c., removed	94
Milkshops and Dairies cleansed and limewashed	89
New Dairies built outside dwelling-houses ...	5
Company's water laid on at Milkshops ...	4
Polluted well closed	1

Number of persons discontinued sale of Milk (Milk kept in Paraffin Stores, Marine Stores, Living rooms, &c.)	52
Cows removed to prevent overcrowding ...	9
Disinfection carried out	4
Smoke test applied to drains	41
Total number of Nuisances abated	810

E. J. CASELY,

Inspector of Dairies and Milkshops.

1894. Regulation of Houses let in Lodgings or occupied by Members of more than one Family.

SUMMARY.

Number of Houses registered to end of 1893 ...	330
„ „ during the year 1894	11
Total number now on register...	341
Particulars of work secured—	
Drains entirely relaid	22
„ partially „	40
W.C.'s fitted with new pans and traps ...	21
„ repaired and cleansed	14
„ provided with flushing appliances and water	4
Sinks and yard gratings trapped	24
Court yards paved or paving repaired ...	33
Roofs repaired	27
Rooms cleansed, repaired, and coloured ...	801
Passages and Staircases ditto	400
Offensive deposits removed from Courtyards ...	8
Additional W.C. accommodation provided ...	1
Nuisances from overcrowding abated ...	9
Total number of Nuisances abated	1,404
Number of Inspections	596
„ re-visits to see work in progress ...	2,008

H. J. KIRLEY.

Inspector of Houses Let in Lodgings

(Until September, 1894. This post was then vacant till end of year)

Housing of the Working Classes Act, 1890.

Number of houses reported during the year as unfit for human habitation		34
Made habitable	15	
Closed under Justices' Order ...	2	
Closed without Order	16	
Remaining to be dealt with ...	1	
	—	34
Reported as obstructive		5

Factory and Workshop Act.

WORKSHOPS.

Number of Workshops on register, December 31st, 1893	349
Number registered during 1894	235
Total now on register...	584

Particulars of Work secured—

Drains relaid	43
,, repaired and amended	58
W.C.'s fitted with new pans and traps ...	94
,, repaired and cleansed	43
,, fitted with flushing appliances and water	65
Sinks and yard gratings trapped	114
Floors and paving repaired	51
Roofs repaired	12
Work-rooms cleansed and limewashed ...	30
Passages and Staircases ditto	15
Work-rooms overcrowded—Nuisance abated ...	10
Better ventilation secured in work-rooms ...	11
Offensive deposits of trade refuse removed ...	12
Other Nuisances abated	14
Company's water provided to workshops ...	37
Extra W.C. accommodation provided ...	35
Total number of Nuisances abated	644

Number of Inspections made	767
,, re-visits to see work in progress ...	2,188
,, particulars sent to H.M. Inspector	128

J. F. COTTY,

Inspector of Workshops, &c.

Until September, and afterwards H. J. Kirley.

Factory and Workshops Act.

BAKEHOUSES.

More attention was given to Bakehouses than in the previous year, and these places were found to be kept up to the general improved condition noted in recent years.

Fifty-seven various defects in forty-six premises were discovered and dealt with (see Table 1), and sixteen written notices were complied with, the remainder being promptly remedied on request.

In one case an oven had been built contrary to the provisions of the Act in an outhouse containing a W.C. This was removed under Notice immediately.

Table 1.

Table of Bakehouse Inspection for the Year.

1894. With particulars of Condition, Contraventions, Action taken, and Result.

Total number of visits and inspections	...	614
Number of visits to Bakehouses, at which they were found in good order	188	
Ditto ditto ditto in fair and passable order	294	
Ditto ditto ditto not in satisfactory condition from one or more of the undermentioned 57 defects	46	
Number of visits made in connection with Notices given, and seeing to proper compliance with same ...	36	
About 280 Bakehouses were in operation during the year	614	614

PARTICULARS OF DEFECTS.

Contraventions of lime-washing regulations, and want of proper cleansing	19	Informal Notices given for the removal of defects and complied with	41
Bakehouse premises with defective drains found thereon	21	Written Notices served and complied with ...	16
Repairs of floors and roofs	9	Formal Notices now running	0
Ventilation	1		
Accumulation of dung in yards	3		
Place used as bakehouse with W.C. directly connected	1		
Impure water supplies	3		
	57		57

S. O. DIMOND,
Inspector.

Table II.

Showing Defects found and remedied in each year since Bakehouse Inspection was instituted.

YEAR.	PARTICULARS.	TOTALS.
1884	Total contraventions in respect of cleansing, limewashing, defective drains, repairs, and defective ventilation.	342
1885	Ditto	244
1886	Ditto	96
1887	Ditto	132
1888	Ditto	69
1889	Ditto	65
1890	Ditto	89
1891	Ditto	80
1892	Ditto	71
1893	Ditto	36
1894	Ditto	57

Particulars of Cases taken before the Justices during the year.

1894.

Date.	Name.	Offence.	Result.
Jan 5th	H. G. Courtenay.	For suffering a Nuisance to exist arising from a defective drain, &c , at a workshop in Rich's Lane	Ordered to abate Nuisance and pay costs
,,	W. R Nurse	For a similar nuisance at 22, Brigstock Road, St. Paul's.	Ordered to pay costs (work done on day of hearing)
Jan. 24th	Eliza Hacker	Failing to notify to M.O.H. a case of Small Pox under her charge	Fined 5/- and costs
Mar. 30th	W. Wager	Exposing himself in the public streets whilst suffering from Scarlet Fever.	Fined 20/- and costs
April	W. Chetwynd	Ditto.	Fined 40/- and costs
,,	G W. Banfield	Exposing himself in public streets whilst suffering from Small Pox.	Fined three guineas and costs
July 4th	W. S. Bryant	Starting an offensive trade without first obtaining the sanction of the Sanitary Authority.	Fined 10/- and costs and discontinued the business
July 20th	H. Rossiter	Nuisance arising from defective drain and W.C at Lower Arcade	Ordered to abate Nuisance and pay costs
,,	G. Williams	Nuisance arising from defective drain and W.C. at 9 Gravel Street, St. James.	Ordered to abate Nuisance and to pay costs
Oct. 26th	Mrs. Matthews	Two houses unfit for human habitation at Cornish Mount Court.	Closing order made with costs
,,	G. Iles	One house in similar condition at Narrow Weir.	Similar order
Nov. 23rd	W. H. Morrish	Nuisance from defective W.C. at 9 Clark Street, St. Paul's.	Case withdrawn on payment of costs (work done)
,,	W. B. Barrett	Nuisance from defective drains and dilapidated houses at three houses at Irvine Terrace, St. Paul's.	Ordered to abate Nuisance and to pay costs
Dec. 21st	Mrs. Bryant	Having three pieces of veal unfit for food concealed at her stall, High Street Market.	Fined £5 and costs
,,	J. Davis	Nuisance from bone and fat boiling at Eugene Street, St. Jude's.	Fined 20/- and costs and ordered to make certain structural alterations

1894.

Baths and Washouses.

The four establishments at
The Weir,
The Mayor's Paddock, New Cut,
Jacob's Wells,
Rennison's,
return the following figures for the year's work:—

	No. of Bathers. Swimming Baths.	Private Baths.	Women Washing Clothes.
The Weir	21,874	42,183	29,202
The Mayor's Paddock, New Cut	17,062	27,886	24,528
Jacob's Wells (Baths only)	30,041	20,005	...
Rennison's (Swimming Bath only)	23,092	...	...

The City Analyst, Mr. F. Wallis Stoddart, F.I.C., F.C.S., has kindly supplied the following returns:—

"FOOD AND DRUGS ACT."

SUMMARY OF RETURNS FOR 1894.

Articles.	Analysed.	Condemned.
Milk	209	23
Skim Milk	6	1
Cream	1	...
Butter	42	2
Margarine	5	...
Cheese	1	...
Olive Oil	2	...
Lard	24	3
Lardine	1	...
Beer	1	...
Bread	8	...
Oatmeal	3	...
Pepper	21	...
Ginger	5	1
Mustard	5	...
Coffee	2	1
Vinegar	15	3
Sugar	10	2
Honey	4	...
Jam	1	..
Pickled peas... ...	1	1
Glycerine	1	...
Beeswax	5	2
Compounded drugs...	7	1
	380	40

The working of this Act in the City of Bristol is entrusted to the Police acting under the Watch Committee, and not to the Sanitary Committee.

PART 111.

Meteorological Observations taken at Clifton College.*

(230 Feet above Mean Sea Level).

1.—TEMPERATURE AND PRESSURE.

1894.

January. The period of very cold weather which commenced in the end of December, 1893, lasted till the 9th of January, when the temperature once more became normal. From the 1st till the 8th the maximum readings of the thermometer were below the average mean temperature, the most intense frost being that recorded on the 6th, when the exposed thermometer fell to 11 degrees. On the 5th the temperature of the air never rose above 20 degrees (12 degrees of frost). For the rest of the month the temperature was somewhat higher than the average. The mean temperature for the whole month was 38·69 degrees, the average for the preceding thirteen years being the same. There was frost on the ground on twelve days. The barometer was high at the beginning of the month, and very variable for the last three weeks.

February. The mean temperature for this month was 42·10 degrees, or 1·72 degrees higher than the average. For the first fortnight the weather was considerably warmer than usual, but from the 18th till the 24th there was a period of cold weather, the mean temperature being for four days as low as freezing point. This period followed immediately after a very heavy fall of rain on the 17th and 18th. For the last four days of the month the weather was warmer than usual. There was frost on the ground on nine days. The barometer was high in the beginning of the month, and again during the cold period above mentioned.

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* I am indebted to the kindness of Mr. Rintoul for these returns.

"*D. S. D.*"

March. This month was warmer than usual, the mean temperature being 45·37 degrees, as compared with the normal value of 41·65 degrees. The excess of temperature was most noticeable during the latter half of the month. This period was one of high barometer, accompanied, as usual at this time of year, with high temperature during the day and low temperature at night. For several days the difference between day and night temperatures amounted to 27 degrees. There was frost on the ground on seven days.

April. The mean temperature for April was 51·22 degrees, the normal mean temperature of this month from the observations of the last thirteen years being 46·74 degrees. The mean temperature fell below the average on three days only. The excess was most noticeable in the first fortnight, during which it amounted to about 8 degrees. There was no frost. There were two periods of low pressure, one about the 16th and 17th and the other from the 22nd to the 28th. The latter was accompanied by the greatest amount of rain.

May. This month was somewhat colder than usual, the mean temperature being 50·17 degrees—2·21 degrees below the average May temperature, and about a degree below the mean temperature of the preceding month. The latter half of the month contributed mainly to this result, as the temperatures up to the 18th were nearly normal. There was no actual frost recorded, but the ground temperature was very near freezing point on the 20th, 21st, and 22nd. The highest temperature recorded was 66·7 degrees on the 25th, and the lowest 32·2 degrees on the 21st.

June. The mean temperature was 57·72 degrees, somewhat lower than the average, 58·98 degrees. During the last five days, however, the weather was considerably warmer than usual, the thermometer rising to 81·8 degrees on the last day of the month. The barometer was somewhat low and variable in the early part of the month, but high and steady during the last week. The lowest temperature on the ground was 39·4 degrees on the 1st.

July. This month was very nearly normal, its mean temperature, 61·41 degrees, being only ·37 degrees above the average. But at the beginning of the month there was a week of exceptionally warm weather, the mean temperature rising as high as 70 degrees on two days. In fact, the end of June and the beginning of July was the hottest period of the summer. The maximum thermometer registered 87·2 degrees on the 1st. From the 7th till the end of the month the temperature was very equable, the mean temperature not once differing more than two degrees from the normal for a fortnight. The lowest temperature on the ground was 46·6 degrees on the 14th.

August. The mean temperature of this month was 58·85 degrees, as compared with the average of 60·24. The most noticeable feature of the temperature was its very uniform character. There were no very hot or very cold days until the end of the month, and the difference between maximum and minimum temperatures for the first three weeks seldom exceeded ten, or fell below five degrees. This was doubtless due to the variable pressure, accompanied by westerly winds. There was, in fact, no "anticyclonic" weather till within five days of the end of the month. Then the range of temperature became larger, amounting to 22½ degrees on the 30th. The highest temperature recorded was 72·3 degrees on the 30th and 31st. It is seldom that we find such a uniform temperature at this time of the year.

September. This month was about two degrees colder than usual, the mean temperature being 54·46 degrees, as compared with the normal value, 56·68 degrees. The mean daily temperature was below the average from the 2nd till the 10th, and above it from the 17th till the 26th. The highest temperature reached was 69·5 degrees on the 1st, and the lowest 36·5 on the 28th. For the first three weeks the barometer was high, with a slight depression on the 8th, accompanied by a good deal of rain. From the 22nd till the 26th it was low, but it again rose, till the reading on the last day of the month was 30·532 inches. This period of high barometer was, as usual, accompanied by low night temperatures, the exposed thermometer falling to 36·5 degrees on the 30th.

October. The mean temperature this month was 1·4 degrees above the average, being 50·25, as against 48·85 degrees. For the first fortnight the mean temperature was above the average, especially from the 8th till the 14th. From the 15th till the 22nd it was below the average, and for the rest of the month well above the average. From the 10th till the 13th even the minimum temperature on the ground was above the average value of the mean temperature for those days. The highest temperature recorded was 62·2 degrees on the 12th, and the lowest 33·7 degrees on the 22nd. The barometer was generally high for the first half of the month, but very low after the 17th. On the 25th the reading was 29·205 inches.

November. The mean temperature for this month was 46·92 degrees, being 2·69 degrees above the average for the preceding thirteen years. The excess was due to the high temperature during the first part of the month, the mean temperature of the last week being nearly normal. For the first five days of the month the minimum temperature recorded never fell so low as the normal mean daily temperature. The barometer was low for the first half of the month, especially so from the 11th to the 16th, when a very large quantity of rain fell. During the last fortnight the pressure kept above 30 inches.

December. The mean temperature for this month was 41·81 degrees, as compared with 39·58 degrees, the average temperature of the preceding thirteen Decembers. The month was thus 2·23 degrees warmer than usual. The first nine days of the month were unusually cold, but from the 9th till the 29th the temperature was above the average. On the 30th began the long frost which forms such a feature of the weather of 1895. There was frost on the ground on nine nights.

The atmospheric pressure was high at the beginning of the month, and from the 24th till the 28th. There were three well marked depressions on the 18th and 19th, the 22nd and the 29th and 30th.

Rainfall at Clifton College, 1894.

MONTHLY SUMMARY.

1894.	Rainfall in Inches.	Dr. Burder's Average 38 Years	Clifton College Average 12 years.	Departure from latter Average.	Number of Rainy Days.
January ...	2·994	3·212	2·459	+ 0·535	24
February ...	4·135	2·213	1·989	+ 2·146	18
March ...	2·725	2·252	1·962	+ 0·763	13
April ...	2·811	2·117	1·826	+ 0·985	17
May ...	1·954	2·399	2·115	- 0·161	17
June ..	2·446	2·551	2·256	+ 0·190	13
July ...	5·030	3·051	3·662	+ 1·368	19
August ...	3·526	3·410	2·893	+ 0·633	18
September	3·283	3·238	3·008	+ 0·275	9
October ...	3·681	3·561	3·819	- 0·138	17
November ..	5·905	3·050	3·228	+ 2·677	19
December ...	3·033	2·834	3·044	- 0·011	16
Year	41·523	33·888	32·261	+ 9·262	200

The year 1894 was distinguished by an exceptionally heavy rainfall, the excess over the average being about 9¼ inches. Since 1880 only two years—1882 and 1891—have shown a slightly greater amount of rain. The excess is most marked in the months of February, July and November. The last column of the table shows the number of days in each month in which ·01 of an inch or more rain fell. It will be observed that in 1894 the number of rainy days so defined is considerably more than half the number of days in the year. There were five days on which more than an inch of rain was measured at 9 a.m. as having fallen during the previous 24 hours. These were :—February 18th, 1·230 inches; April 26th, 1·048 inches; July 25th, 2·700 inches; September 25th, 1·375 inches; November 13th, 1·565 inches. Between Thursday, 8th, and Thursday, 15th November (both inclusive), there fell 5·18 inches of rain, giving an average fall per day of nearly two-thirds of an inch. This heavy rainfall produced serious floods in many parts of the country, notably in the Valley of the Thames and in the neighbourhood of Bath.

Meteorology for the 52 Weeks ending December 29th, 1894.

Height above Mean Sea Level—250 feet.

1894.	BAROMETRIC PRESSURE at 32° and Sea Level			Mean Temperature	Highest Mean Daily Temperature	Lowest Mean Daily Temperature	Max. Temperature in Shade	Min. Temperatue at 4ft above ground	Min. Temperature on grass	Mean Daily Range of Thermometer	Greatest Daily Range of Thermometer	Smallest Daily Range of Thermometer	Mean Humidity	Grains of Vapour in a cubic ft. of air	Prevalent Wind.
Week Ending	Mean	Highest	Lowest												
	Inches	Inches	Inches												
Jan. 6	30·26	30·62	29·64	27·11	32·95	17·45	38·6	14·1	11·8	8·0	13·9	0·8	—	—	E.
,, 13	29·91	30·02	29·77	40·01	48·90	24·75	51·5	20·1	17·5	9·7	17·8	2·6	89	3·31	S.
,, 20	29·81	30·11	29·56	44·83	48·50	42·15	50·9	39·4	25·0	4·6	10·2	0·8	88	3·09	S.W.
,, 27	29·89	30·21	29·70	41·22	44·80	36·35	50·3	27·8	25·2	9·8	17·9	1·1	83	2·33	W.
Feb. 3	29·88	30·15	29·37	41·39	46·25	38·20	50·3	34·0	30·7	7·9	14·0	2·0	88	2·65	N.W.
,, 10	30·19	30·50	29·86	46·33	49·85	44·90	53·0	37·2	34·2	8·4	16·8	2·5	88	3·24	S.W.
,, 17	29·99	30·21	29·61	42·60	47·95	38·95	50·8	33·7	29·4	7·4	13·1	1·5	86	2·71	Variable
,, 24	30·29	30·57	29·72	34·81	42·00	31·60	46·2	24·2	20·2	11·9	17·8	5·8	—	—	Variable
March 3	29·93	30·24	29·74	44·28	48·00	41·85	52·0	35·4	29·5	9·7	13·8	6·0	91	3·00	S.W.
,, 10	29·89	30·41	29·63	43·42	46·65	40·50	50·3	34·6	28·4	10·0	12·1	7·3	88	2·95	W.
,, 17	29·68	30·26	29·27	42·81	48·00	40·10	50·2	31·0	27·7	11·0	18·2	4·4	84	2·49	W.
,, 24	30·39	30·50	30·29	45·61	49·00	42·50	56·3	31·2	27·7	15·3	22·6	11·5	85	2·75	N.E.
,, 31	30·09	30·28	29·75	50·71	54·25	46·85	65·3	35·2	32·0	24·2	27·7	18·1	82	2·84	E.
April 7	30·04	30·20	29·88	52·69	54·80	51·25	66·3	40·8	36·4	19·2	25·5	14·9	80	3·09	N.E.
,, 14	29·89	30·04	29·64	52·79	57·55	50·15	67·5	41·0	36·7	16·3	23·9	6·6	86	3·49	Variable
,, 21	29·82	30·22	29·29	48·27	51·0	45·1	60·3	38·0	34·4	12·9	20·2	5·5	82	3·38	Variable
,, 28	29·75	29·95	29·63	49·55	53·50	45·25	60·5	40·5	36·2	11·9	14·6	6·3	82	3·38	Variable
May 5	30·13	30·42	29·94	50·62	54·40	47·00	60·8	40·3	36·5	11·9	16·8	7·4	76	3·33	N.
,, 12	29·89	30·09	29·76	50·46	52·50	47·60	58·2	43·2	39·3	9·7	13·8	3·6	78	3·33	W.
,, 19	30·09	30·26	29·92	52·71	56·45	47·65	65·0	41·3	38·0	11·8	22·2	7·1	78	3·43	N.E.
,, 26	30·13	30·35	29·9	48·61	54·05	43·20	66·7	35·7	32·2	17·2	25·3	9·1	69	2·59	N.E.
June 2	29·77	29·90	29·64	50·41	56·95	46·35	62·3	41·0	36·2	12·9	15·7	10·7	74	3·27	Wsly.
,, 9	29·90	30·04	29·79	55·36	59·70	50·45	64·6	45·3	41·7	9·1	17·0	3·5	83	4·11	Variable
,, 16	30·06	30·22	29·86	56·09	60·25	52·35	67·3	47·0	42·2	11·7	17·4	6·4	73	3·76	N.W.
,, 23	30·05	30·22	29·80	57·54	61·45	53·25	71·4	44·7	40·2	13·7	24·0	5·5	78	4·16	W.
,, 30	30·27	30·38	30·03	63·00	68·45	56·90	81·8	52·0	47·4	17·7	26·7	8·6	77	4·48	Variable

Meteorology for the 52 Weeks—Continued.

Height above Mean Sea Level—250 feet.

1894.	BAROMETRIC PRESSURE at 32° and Sea Level			Mean Temperature	Highest Mean Daily Temperature	Lowest Mean Daily Temperature	Max. Temperature in Shade	Min. Temperature at 4ft above ground	Min. Temperature on Grass	Mean Daily Range of Thermometer	Greatest Daily Range of Thermometer	Smallest Daily Range of Thermometer	Mean Humidity	Grains of Vapour in a cubic ft. of air	Prevalent Wind.
Week Ending	Mean	Highest	Lowest												
	Inches	Inches	Inches												
July 7	30·15	30·26	29·98	65·29	73·10	59·75	87·2	51·5	49·0	17·2	28·2	5·2	74	4·91	Wsly.
,, 14	29·67	30·11	29·38	59·25	60·20	58·15	69·3	50·1	46·6	11·2	19·2	6·3	82	4·57	Wsly.
,, 21	29·86	29·95	29·72	59·51	62·15	58·45	69·3	53·7	50·8	8·9	14·3	5·4	84	4·68	W.
,, 28	29·97	30·12	29·91	60·56	63·65	57·60	73·2	52·5	51·2	12·31	19·1	7·6	83	4·76	Variable
August 4	29·88	30·15	29·64	61·13	64·70	57·50	70·4	52·0	49·0	9·0	14·0	4·7	85	4·96	S.W.
,, 11	29·95	30·21	29·80	58·83	62·45	55·60	67·7	50·2	46·8	10·5	13·8	7·4	78	4·55	Variable
,, 18	29·99	30·20	29·61	58·65	61·45	55·55	66·3	51·6	46·7	7·3	10·3	5·3	77	4·41	N.W.
,, 25	29·99	30·14	29·85	57·48	58·80	56·05	65·6	50·2	45·4	7·5	13·6	1·9	87	4·53	Variable
Sept. 1	30·20	30·32	29·99	60·19	63·05	56·95	72·3	49·8	46·2	15·7	22·5	9·3	85	4·72	N.E.
,, 8	30·15	30·28	29·99	54·56	61·10	52·05	67·4	43·8	39·7	14·4	17·2	10·4	81	3·93	N.
,, 15	30·44	30·52	30·28	55·51	57·60	53·40	66·9	46·5	42·4	15·0	20·6	11·4	81	3·93	N.E.
,, 22	30·17	30·40	29·88	55·82	58·40	54·60	63·2	47·6	45·5	8·0	12·7	3·2	88	4·25	N.E.
,, 29	30·02	30·40	29·70	52·65	59·25	47·50	63·2	38·6	36·5	9·4	17·8	2·1	91	3·93	N.E.
October 6	30·32	30·53	30·02	50·86	52·40	48·55	57·3	39·9	36·5	8·7	12·3	5·2	87	3·48	N.E.
,, 13	30·21	30·34	30·03	55·13	59·30	50·80	62·2	47·2	44·8	7·4	12·9	4·2	93	4·37	Variable
,, 20	29·99	30·23	29·56	45·60	50·15	43·60	52·2	39·2	35·9	7·4	11·9	3·6	85	2·89	N.E.
,, 27	29·51	29·97	29·20	48·79	53·60	40·45	58·7	34·5	33·7	10·0	20·0	3·8	86	3·46	Variable
Nov. 3	29·80	30·01	29·65	53·74	57·80	49·60	60·2	45·0	42·0	6·9	11·4	2·0	90	4·75	S.W.
,, 10	29·86	30·21	29·68	49·73	53·70	47·90	56·4	40·0	38·0	9·2	16·2	4·6	85	3·30	W.
,, 17	29·55	30·08	29·13	45·97	47·60	44·80	53·0	40·2	35·7	7·6	12·2	1·2	89	3·12	Variable
,, 24	30·29	30·47	30·12	45·54	50·45	41·90	53·3	36·5	34·0	8·5	12·7	2·6	92	3·25	S.E.
Dec. 1	30·44	30·56	30·36	39·86	44·10	32·35	49·0	30·6	27·7	6·6	9·8	3·5	87	2·45	Variable
,, 8	30·02	30·47	29·78	35·83	38·50	30·30	43·0	27·1	26·6	9·5	14·5	6·0	91	2·49	E.
,, 15	30·11	30·19	30·06	46·64	51·20	39·15	53·5	33·1	29·3	7·7	12·1	4·7	90	3·29	Variable
,, 22	29·88	30·18	29·50	44·65	47·20	41·65	51·2	32·9	28·5	6·4	17·5	0·4	86	3·03	W.
,, 29	30·36	30·74	29·55	42·76	46·60	39·70	50·0	35·2	30·2	7·7	11·2	4·3	87	2·83	W.

Rainfall of 1894.

Week Ending.	Rain. Inches.	Week Ending.	Rain. Inches.
January 6	·044	July 7	·090
„ 13	·342	July 14	·705
„ 20	1·212	„ 21	·510
„ 27	·681	„ 28	3·125
February 3	1·470	August 4	1·390
„ 10	·512	„ 11	·757
„ 17	·438	„ 18	·466
„ 24	1·665	„ 25	·663
March 3	1·340	Sept. 1	·850
„ 10	·595	„ 8	·919
„ 17	1·555	„ 15	nil
„ 24	nil	„ 22	·147
„ 31	nil	„ 29	2·217
April 7	·052	October 6	·010
„ 14	·200	„ 13	·225
„ 21	·536	„ 20	·125
„ 28	1·799	„ 27	1·648
May 5	·326	Nov. 3	1·973
„ 12	·730	„ 10	1·140
„ 19	·567	„ 17	4·185
„ 26	·080	„ 24	·280
June 2	·630	Dec. 1	nil
„ 9	1·360	„ 8	·195
„ 16	·420	„ 15	1·075
„ 23	·411	„ 22	1·895
„ 30	·090	„ 29	·368

D. RINTOUL.

ANALYSIS OF DEATHS REGISTERED IN THE CITY AND COUNTY OF BRISTOL,

DURING THE YEAR ENDING SATURDAY, 29th DECEMBER, 1894.

Registration Districts.	Registration Sub-Districts.	Births.	Deaths.	Under 1 year of age.	Over 1 and under 5 years of age.	Aged 60 years and upwards.	Principal Zymotic Diseases. Small Pox.	Measles.	Whooping Cough.	Diphtheria.	Membranous Croup.	Scarlet Fever.	Enteric Fever.	Typhus.	Intermittent Fever.	Influenza.	Diarrhœa and Dysentery.	Asiatic Cholera	Total Deaths from Zymotic Diseases
Bristol	St. Mary Redcliff	246	161	50	25	31	.	2	5	..	...	...	...	...	1	...	3	...	11
,,	Castle Precincts	125	94	19	5	20	...	1	...	2	..	1	1	...	...	1	1	...	7
,,	St. Paul	563	329	91	55	82	1	5	19	6	1	1	..	...	...	..	6	...	39
,,	St. James	203	130	24	20	37	...	3	4	1	...	1	1	...	...		1	...	11
,,	St. Augustine	284	200	37	26	74	1	5	6	1	...	1	...	...	...	1	2	...	17
Bedminster	Bedminster	1804	783	257	145	137	1	39	67	12	3	2	5	...	..	9	16	...	154
Barton Regis	Clifton	546	373	67	34	162	...	11	11	2	...	2	1	...	...	3	6	...	36
,,	Ashley	600	305	72	47	81	2	7	17	5	1	1	2	...	...	4	7	...	46
,,	St. Philip	1721	883	283	131	169	2	35	42	10	..	3	6	...	...	4	17	..	119
,,	Westbury	246	196	24	9	95	..	5	3	1	...	1	1	...	...	4	1	...	16
,,	Extra-Municipal Institutions	55	318	22	10	169	3	1	2	...	...	1	2	...	...	..	5	...	14
,,	Not belonging to Borough..	...	116	2	17	20	1	2	1	5	...	2	2	...	...	...	...	...	13
	TOTALS	6393	3888	948	524	1077	11	116	177	45	5	16	21	...	1	26	65	..	483

Registration Sub-Districts.	Erysipelas.	Syphilis.	Rheumatism.	Malignant Disease, Cancer.	General Tubercular Diseases.	Phthisis.	Respiratory. Pneumonia.	Respiratory. Bronchitis & other Diseases of Respiratory Organs.	Nervous System. Diseases of the Brain and Membranes	Nervous System. Diseases of other parts of the Nervous System.	Circulatory. Diseases of the Heart.	Circulatory. Diseases of other Organs of the Circulation.	Digestive. Diseases of the Liver.	Digestive. Diseases of other Digestive Organs.	Urinary. Diseases of the Urinary Organs.	Puerperal. Puerperal Fever. Puerperal Septicæmia.	Puerperal. Puerperal Diseases (not infectious).	Premature Birth. Congenital Malformations.	Senile Decay.	Violence.	Other Causes.	Inquest Cases.	Uncertified Deaths.	Rates per 1000 per annum. Birth Rate.	Death Rate.	Zymotic Rate.	Phthisis Rate.	Infantile Death Rate per 1,000 Births.
St. Mary Redcliff	...	2	..	2	6	18	15	18	15	11	13	2	3	5	1	...	1	6	5	10	17	23	1	26·7	17·5	1·1	1·9	203·2
Castle Precincts	...	...	2	1	...	6	5	11	5	4	9	1	3	4	7	...	1	2	2	15	9	20	...	23·7	17·9	1·1	1·0	152·0
St. Paul	1	2	4	14	16	31	22	45	16	8	30	3	5	15	6	1	2	13	17	5	34	14	6	29·3	17·1	2·0	1·6	161·6
St. James	...	1	...	7	11	15	8	22	11	5	5	1	3	5	5	...	...	4	3	6	7	13	...	26·5	17·0	1·4	1·0	118·2
St. Augustine	1	3		13	6	15	12	25	11	5	19	1	3	9	9	...	3	5	15	9	19	18	2	20·7	14·5	1·1	1·0	130·3
Bedminster	1	5	4	44	30	67	58	57	38	42	46	9	11	42	18	4	6	30	34	18	65	52	4	37·5	16·3	3·9	1·3	142·7
Clifton	1	1	1	27	6	15	27	37	26	25	40	7	9	23	14	1	3	6	25	10	33	29	6	18·4	12·6	1·1	0·5	122·7
Ashley	...	2	2	12	16	45	15	26	29	16	16	..	4	13	5	1	...	20	14	8	15	15	8	23·3	11·8	1·6	1·8	120·0
St. Philip	1	8	2	33	24	67	88	160	45	44	65	11	11	28	24	4	1	40	32	21	55	58	17	33·0	16·9	2·2	1·2	164·5
Westbury	1	...	1	10	7	18	11	21	18	11	23	3	2	16	9	...	...	6	9	..	14	2	2	15·1	12·0	0·7	1·0	97·5
Extra-Municipal Institutions	2	5	..	9	9	31	14	25	91	5	14	5	2	3	3	..	2	1	52	3	28	5	1	...	...	..	...	...
Not belonging to Borough..	...	...	1	11	5	4	6	6	5	4	4	2	1	16	7	...	...	...	...	19	12	22	...	...	...	...	..	. .
TOTALS	8	29	17	183	136	332	281	453	310	180	284	45	57	179	108	11	19	133	208	124	308	271	47	28.81	17·16	2·02	1·47	148·31

NOTIFICATIONS RECEIVED DURING THE YEAR BY SUB-DISTRICTS AND AGE GROUPS.

Deaths in Public Institutions.	
General Hospital	182
St. Peter's Hospital	4
Royal Infirmary	217
Children's Hospital	42
Home for Crippled Children	...
SANITARY AUTHORITY'S—	
Small Pox Hospital	5
Fever Hospital	2
EXTRA MUNICIPAL—	
Bristol Union Workhouse	106
Barton Regis Union Workhouse	116
Long Ashton Union W'house, Bed.	34
Lunatic Asylum	62
TOTAL	770

Registration Sub-Districts.	Small Pox. Under 5.	5 to 10.	10 to 15.	15 upwards.	TOTAL.	Cholera. Under 5.	5 upwards.	TOTAL.	Diphtheria. Under 5.	5 to 10	10 to 15.	15 upwards.	TOTAL.	Membranous Croup. Under 5.	5 to 10.	10 to 15.	15 upwards.	TOTAL.	Erysipelas. Under 5.	5 upwards.	TOTAL
St. Mary Redcliff	...	...	...	7	7	...	...	...	3	...	...	...	3	...	...	...	...	...	1	10	11
Castle Precincts	...	...	...	2	2	...	...	...	3	...	...	...	3	...	...	1	...	1	...	7	7
St. Paul	2	2	5	24	33	...	...	...	7	5	1	1	14	1	...	...	...	1	...	14	14
St. James	...	...	...	2	2	..	...	...	1	...	...	1	2	...	...	...	...	...	..	7	7
St. Augustine	...	...	.	6	6	...	...	...	...	1	1	...	2	...	...	...	...	..	...	8	8
Bedminster	2	1	3	37	43	...	...	..	13	7	2	2	24	6	...	...	...	6	1	34	35
Clifton	...	...	...	8	8	...	...	...	...	2	1	6	9	...	1	...	...	1	...	9	9
Ashley	...	...	.	14	14	...	...	...	3	7	3	7	20	1	...	...	...	1	...	15	15
St. Philip	1	5	10	65	81	...	...	...	9	8	1	7	25	1	...	...	...	1	2	40	42
Westbury	...	...	...	2	2	...	...	...	1	2	3	2	8	...	..	..	...	...	...	5	5
Admitted to Public Institutions from Outside of Borough	...	...	...	...	...	...	...	...	2	3	1	2	8	...	...	...	...	...	...	...	...
Extra Municipal Inst'ns	...	...	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Total Cases of each Disease	5	8	18	170	201	...	...	...	42	35	13	28	118	9	1	1	...	11	4	150	154

Registration Sub-Districts.	Scarlet Fever. Under 5.	5 to 10.	10 to 15.	15 upwards.	TOTAL.	The Fevers known as Typhus Under 5	5 to 10.	10 upwds.	TOTAL.	Typhoid, Enteric. Under 5	5 to 10	10 upwds.	TOTAL.	Relapsing. Under 5.	5 upwds.	TOTAL.	Continued or Doubtful. Under 5	5 upwds.	TOTAL.	PUERPERAL.	TOTAL CASES IN EACH SUB-DISTRICT
St. Mary Redcliff	2	7	3	2	14	...	...	...	..	...	...	5	5	...	...	...	...	...	...	...	40
Castle Precincts	3	1	4	..	8	..	...	...	...	...	2	2	4	...	...	...	...	...	...	...	25
St. Paul	20	22	9	4	55	...	...	...	...	...	...	5	5	...	...	...	...	...	...	1	123
St. James	8	7	4	2	21	...	...	...	...	...	1	5	6	...	...	...	..	...	...	...	38
St. Augustine	3	6	4	3	16	...	...	...	...	2	1	5	8	...	...	...	...	...	...	...	40
Bedminster	27	21	9	9	66	...	...	...	...	2	10	15	27	...	...	...	...	1	1	9	211
Clifton	13	24	9	8	54	..	..	...	...	...	1	5	6	...	...	...	...	...	...	1	88
Ashley	23	27	8	11	69	...	...	...	...	1	1	7	9	...	...	...	...	..	...	1	129
St. Philip	66	45	18	18	147	...	...	...	...	...	2	11	13	...	...	...	...	...	...	6	315
Westbury	10	13	5	7	35	...	...	...	...	...	...	3	3	...	...	...	...	...	...	...	53
Admitted to Public Institutions from Outside of Borough	1	3	...	...	4	...	...	...	...	...	...	3	3	...	...	...	..	...	...	...	15
Extra Municipal Inst'ns	1	...	.	...	1	...	...	...	...	...	...	1	1	...	...	...	...	..	...	...	6
Total Cases of each Disease	177	176	73	64	490	...	...	...	...	5	18	67	90	...	...	...	...	1	1	18	1083

The average age at Death of Persons aged 60 years and upwards was 72 years and 6 months. Births of Illegitimate Children 189. Deaths of Illegitimate Children 63.
Average Death Rate for 10 Years, 20·32. Death Rate last year, 18·83.

LOCAL GOVERNMENT BOARD.—Table A.

No 3.

(A) **TABLE OF DEATHS** during the Year 1894, in the Urban Sanitary District of Bristol, classified according to DISEASES, AGES, and LOCALITIES.

Names of Localities adopted for the purpose of these Statistics; public institutions being shown as separate localities. (a)	Mortality from all causes, at subjoined ages. At all ages. (b)	Under 1 year. (c)	1 and under 5 (d)	5 and under 15 (e)	15 and under 25 (f)	25 and under 65 (g)	65 and upwards (h)	(i)	Mortality from subjoined causes, distinguishing Deaths of Children under 5 years of Age. 1 Smallpox.	2 Scarlatina.	3 Diphtheria	4 Membranous Croup.	5 Fevers. Typhus.	6 Fevers. Enteric or Typhoid	7 Fevers. Continued	8 Fevers. Relapsing	9 Fevers. Puerperal.	10 Cholera.	11 Erysipelas.	12 Measles.	13 Whooping Cough.	14 Diarrhœa and Dysentery.	15 Rheumatic Fever	16 Ague.	17 Phthisis.	18 Bronchitis, Pneumonia, and Pleurisy,	19 Heart Disease.	20 Injuries,	21 All Other Diseases.	22 TOTAL
Saint Mary Redcliff ...	136	46	17	4	7	37	25	Under 5												2	4	1			1	18	1	1	35	63
								5 upwds.														2			15	11	7	6	32	73
Castle Precincts ...	75	17	3	1	6	37	11	Under 5		1	1											2			1	5		1	9	20
								5 upwds.															1		4	8	10	14	18	55
Saint Paul	285	88	44	12	16	71	54	Under 5			1	1								5	19	4				35	1		66	132
								5 upwds.	1	1	2						1		1			2	2		29	35	26	2	51	153
Saint James	99	22	15	3	4	34	21	Under 5												1	4	1				11			20	37
								5 upwds.																	15	15	3	3	26	62
Saint Augustine ...	177	35	19	3	5	63	52	Under 5		1										5	6	2				14			26	54
								5 upwds.											1						13	18	16	6	69	123
Bedminster	725	253	135	25	32	178	102	Under 5		2	3	2							1	35	67	13			5	69	1	1	189	388
								5 upwds.			4			3			4			3		1	3		59	34	36	10	180	337
Clifton	347	65	29	8	11	103	131	Under 5			1									9	11	5			2	26	1	1	38	94
								5 upwds.		1	1			1			1		1	1		1			11	36	31	5	163	253
Ashley	291	70	38	35	20	59	69	Under 5		1	2	1		1						5	17	4				24		2	51	108
								5 upwds.	2		2			1			1			1		3	1		43	17	15	4	93	183
Saint Philip	797	278	129	26	29	217	118	Under 5		2	5			2						35	41	16			3	130		3	170	407
								5 upwds.			4			2			4		1		1	1	2		60	89	52	8	166	390
Westbury	186	23	8	9	8	55	83	Under 5		1	1									2	3					4			20	31
								5 upwds.						1					1	2		1			17	25	20	1	87	155
Royal Infirmary ...	217	5	32	17	27	114	22	Under 5			9									1	1					11		10	5	37
								5 upwds.			2			3						1	1				17	16	20	23	97	180
General Hospital ...	182	14	18	13	22	95	20	Under 5			3	1										1				8		4	15	32
								5 upwds.			1			5						1			3		5	14	18	16	87	150
Children's Hospital ...	42	6	25	10		1		Under 5		2	2									6					1	5		1	14	31
								5 upwds.		1	1															2			7	11
Saint Peter's Hospital ...	4	2					2	Under 5																					2	2
								5 upwds.																		1			1	2
Small Pox Hospital ...	5					5		Under 5																						
								5 upwds.	5																					5
Fever Hospital... ...	2		2					Under 5		2																				2
								5 upwds.																						
Bristol Union Workhouse...	106	3	2		1	50	50	Under 5																					5	5
								5 upwds.						1					2			1			13	11	6	1	66	101
Barton Regis do do	116	16	6	1	4	38	51	Under 5		1										1	2					3			15	22
								5 upwds.	3													3			14	11		1	62	94
Long Ashton do do	34	5	2		2	10	15	Under 5														1							6	7
								5 upwds.																	1	3	1		22	27
Lunatic Asylum ...	62				4	44	14	Under 5																						
								5 upwds.						1											3	5	6		47	62
TOTALS	3888	948	524	167	198	1211	840	Under 5		13	28	5		3					1	107	175	50			13	363	4	24	686	1472
								5 upwds.	11	3	17			18			11		7	9	2	15	12		319	351	267	100	1274	2416

The subjoined numbers have also to be taken into account in judging of the above records of mortality.

Deaths occurring outside the district among persons belonging thereto.				No	Retu	rn		Under 5																						
								5 upwds.																						
Deaths occurring within the district among persons not belonging thereto.				No	Retu	rn		Under 5																						
								5 upwds.																						

LOCAL GOVERNMENT BOARD.—Table B.

K^{2}11

(B). Table of Population, Births, and of New CASES of Infectious Sickness, coming to the knowledge of the Medical Officer of Health, during the year 1894, in the Urban Sanitary District of Bristol: classified according to DISEASES, AGES, and LOCALITIES.

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities. (a)	Population at all Ages.		(c) Registered Births	Aged under 5 or over 5. (d)	New Cases of Sickness in each locality coming to the knowledge of the Medical Officer of Health.													Number of such Cases Removed from their Homes in the severa localities for treatment in Isolation Hospital												
	Census, 1891. (b)	Estimated to middle of 1894.			1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	10	11	12	13
									Fevers.													Fevers.								
					Small Pox	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued	Relapsing.	Puerperal.	Cholera.	Erysipelas			Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Typhus.	Enteric or Typhoid.	Continued	Relapsing.	Puerperal.	Cholera.	Erysipelas.		
St. Mary Redcliff H H ...	9,292	9,197	246	Under 5		2	3								1				1	2										
				5 upwds	7	11				5					10			7	6				4					1		
Castle Precincts	5,595	5,252	125	Under 5		2	3													3										
				5 upwds.	2	5		1		4					7			2					3							
St. Paul	19,036	19,166	563	Under 5	2	20	7	1										2	7	3										
				5 upwds.	31	35	6			5			1		14			26	12				2	1						
St. James H	7,831	7,648	203	Under 5		6	1												2	1										
				5 upwds.	2	13	1			6					7			2	3	1			2							
St. Augustine H	13,795	13,707	284	Under 5		3				2									1											
				5 upwds.	6	12	2			6					8			6	6	2			3					1		
Bedminster H	45,627	48,023	1804	Under 5	2	27	13	6		2					1			2	5	4	2									
				5 upwds.	41	38	11			25	1		9		34			38	8				10							
Clifton	29,345	29,559	546	Under 5		13													8											
				5 upwds.	8	41	9	1		6			1		9			8	13	1										
Ashley	24,042	25,715	600	Under 5		23	3	1		1									2		1									
				5 upwds.	14	44	17			8			1		15			12	12	1			1							
St. Philip H	51,624	52,064	1721	Under 5	1	66	9	1							2			1	8	4										
				5 upwds.	80	80	16			13			6		40			77	26	1			6							
Westbury	15,391	16,247	246	Under 5		10	1												4											
				5 upwds.	2	25	7			3					5			2	8				1							
Bristol General Hospital ...	Admitted from outside of Borough.			Under 5																										
				5 upwds.			1			3										1			3							
Bristol Royal Infirmary ...				Under 5			2													2										
				5 upwds.			4													3										
Children's Hospital				Under 5		1													1											
				5 upwds.		3	1												3	1										
St. Peter's Hospital ...				Under 5																										
				5 upwds.																										
Small Pox Hospital... ..	Admitted from outside of Borough.			Under 5																										
				5 upwds.																										
Fever Hospital				Under 5		2													2											
				5 upwds.		2													2											
Bristol Union Workhouse...			55	Under 5																										
				5 upwds.											1													1		
Barton Regis Workhouse ...				Under 5		1																								
				5 upwds.	3													3												
Long Ashton Workhouse ..				Under 5																										
				5 upwds.																										
Lunatic Asylnm				Under 5																										
				5 upwds.						1																				
Totals...	221,578	226,578	6393	Under 5	5	176	42	9		5					4			5	41	19	3									
				5 upwds.	196	309	75	2		85	1		18		150			183	99	11			35	1				3		

Notification of Infectious Disease has been compulsory in Bristol since February 12th, 1890. Only those Diseases Scheduled in the Act are at present Notifiable. The Isolation Hospitals used by the Sick of the District are :—

NAME OF HOSPITAL.	DISEASES ISOLATED.	DISTRICT WHERE SITUATED.
1.—Sanitary Authority's Hospital	Small Pox and Scarlet Fever	Novers Hill, Bedminster, outside City.
2.—Bristol Guardians' Hospital	Small Pox, Fever, Erysipelas	Stapleton, outside City.
3.—Barton Regis Guardians' Hospital	Small Pox and Fever (now closed, except for cases arising in the House)	Eastville, Stapleton, outside City.
4.—Bedminster Guardians' Hospital		Absorbed by the Novers Hill Hospital (1).
5.—Children's Hospital	Scarlet Fever, Erysipelas	St. Augustine, Bristol.
6.—Bristol General Hospital	Enteric Fever	Partly in St. Mary Redcliff, and partly in Bedminster.
7.—Royal Infirmary	Ditto	St. James, Bristol.
8.—Clift House (temporary)	Scarlet Fever, Diphtheria, Fever	Bedminster, Bristol.

Diphtheria is, as a rule, only admitted into Public Institutions in cases where operation is necessary.

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1894.

CITY & COUNTY OF BRISTOL.

REPORT

ON

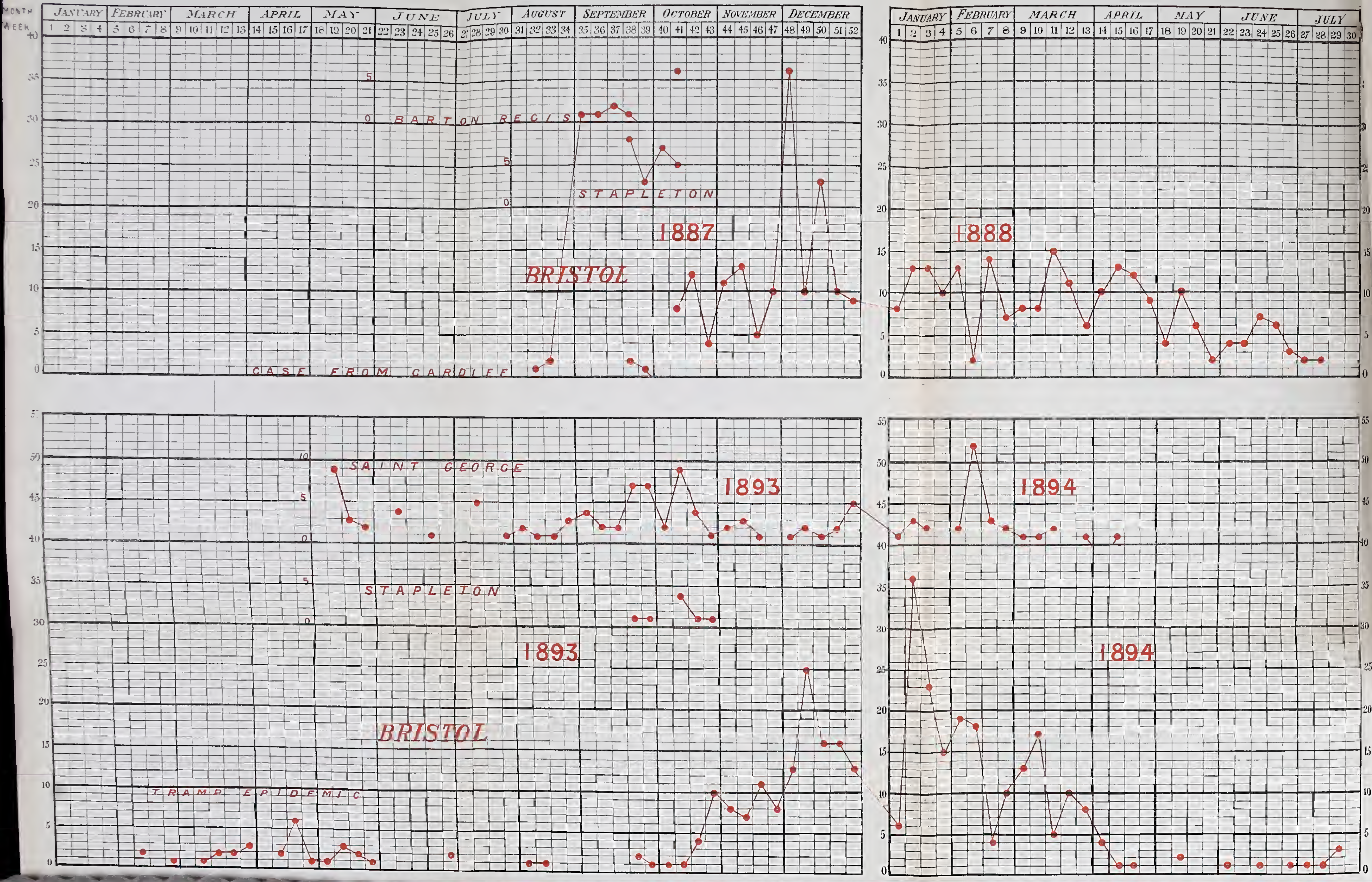
SMALL-POX

In BRISTOL during the Years 1893-1894.

Presented with the Annual Report of the Medical Officer of Health for 1894, and Printed by Order of the Sanitary Committee.

BRISTOL:
Bennett Brothers, Ld., Printers, Counterslip.
1895

CHART *Showing the Rise & Progress of the 1887-88 and of the 1893-94 Smallpox Epidemics in the City of Bristol, & in the Adjacent Districts.*



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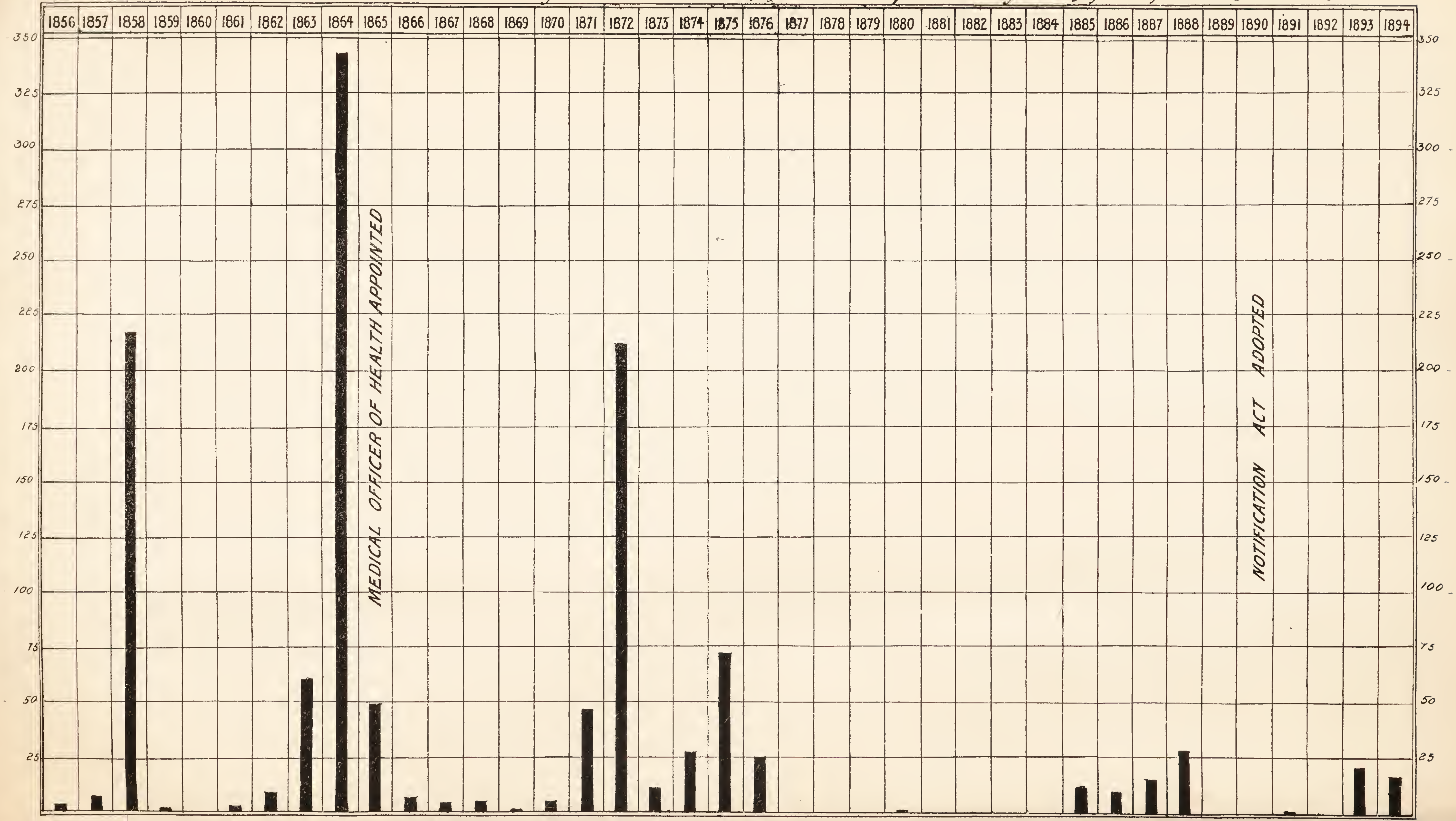
1895

CITY OF BRISTOL. CHART *Showing Annual Mortality from Smallpox during the 39 years from 1856 to 1894.*



SMALL-POX.

The records of Small-pox mortality in Bristol are available for the past 39 years, and are graphically shown on the accompanying chart, which gives the actual number of deaths returned annually from this cause during this series of years. The population of the city has risen from 182,552 at the Census of 1871, to 226,578 in 1894, estimated on the Census of 1891. Previous to 1871, the mortality returns are given by the Registrar-General for "Bristol," having, as part of three registration districts, an estimated mean population of about 145,000 during the intercensal period, 1851-61, and of about 160,000 during the intercensal period 1861-71.

The *rates* of mortality, calculated upon the smaller population of these earlier and very fatal years, would show a yet more marked comparative difference, when compared with the rates of recent years, than is apparent from the *actual number* of deaths as shown on this chart.

The behaviour of Small-pox for the 21 years, 1856 to 1876, shows a practically unbroken and fatal record of its endemic prevalence. The wave of mortality fluctuated, it is true, falling when a violent outburst had exhausted the most susceptible material, but rising again at 5- or 6-year intervals with undiminished vigour. In these 21 years 1,070 persons died from small-pox, a fatality which, with an average case-mortality of 10 per cent., would correspond to 10,700 cases, or an average of 500 cases a year. We have, however, no accurate record of these cases, as there was then no Notification supervision.

The circumstances of control associated with this period of time, were these:—Vaccination, which had been voluntary up to 1854, was made compulsory in that year; penalties for non-compliance were re-enacted in 1867, and, with the oncoming of the pandemic in 1870-71, the machinery for the due observance of the Vaccination Acts was made more effective. In Bristol a Medical Officer of Health (at first named Medical Inspector, as a tentative step) was appointed, during the concurrent epidemic prevalence of Typhus in 1865, and from that time forward some systematic attempt at isolation was made, chiefly in the direction of provision, by the Guardians, of isolation hospitals for pauper infectious cases, the care of which at that time they did not repudiate. In 1890 the adoption of the Notification Act of the previous year gave for the first time a complete opportunity of studying the introduction (for re-crudescence of the disease after a complete lapse invariably implies re-introduction) and the progress of an epidemic.

The severe pandemic of 1870-76 was fully shared by Bristol, which contributed in those seven years, 385 deaths, implying some 3,850 cases.

When the immediate stress of this epidemic had abated, there was opportunity for reaping the benefit of a more strict administration of the Vaccination Laws, and of some intelligent application of isolation and disinfection methods of control. A period of eight years of practical immunity, broken only by an abortive outbreak in 1880, succeeded the pandemic prevalence.

The inter-epidemic period had increased from 4 or 5 years to 8, an extension due, we think, indisputably, to the added protective influence of more general vaccination ; and corresponding, as our experience shows, to the period of practically complete immunity conferred by a successful primary vaccination.

Only one death from this disease occurred during 1880, the infection being clearly traceable to a neighbouring city. The patient, a female, was removed from a crowded part of the district into the Sanitary Authority's Hospital, where she died. Several other cases broke out about the same time;

but by removal into hospital or isolation in other ways, and thorough disinfection of all infected houses, followed up by a continuous watching of all such houses for a considerable period, the disease was in every instance prevented from spreading.

During 1891 no death occurred, but the disease broke out at three different points, and by isolation and thorough disinfection the City was effectually protected.

The last occasion, previous to 1893, upon which Small-pox became seriously epidemic in Bristol was in 1887-88, when 327 cases occurred between August 1887 and July 1888.

Upon this occasion the City epidemic was preceded by an accumulation of cases for some weeks in the adjacent Local Board District of Stapleton, in and around the Infectious Wards of the Barton Regis Workhouse. From this focus of disease the City rapidly became infected, as detailed in the Annual Report for 1887.

It is true that the first case of this epidemic, imported from Cardiff, developed the disease in the Bedminster Registration sub-district of Bristol, but no extension of the disease occurred in this district. The case was, however, transferred by the Bedminster Guardians to the Barton Regis Guardians, whose Hospital is outside the City and adjacent to Eastville (Stapleton). Hence arose the focus of infection from which the City in turn suffered, a result largely due to the unfortunate multiplication of Authorities having the care of infectious cases in the City.

Small-pox was again introduced into Bristol in November, 1888, by a boy who had been on a visit to some friends at Newport, Mon., where he contracted the disease; and, upon his return, infected his two brothers. The cases were promptly isolated, and no extension resulted.

In 1889 one case of Small-pox, supposed to be introduced from Cardiff, was reported in January, but was followed by no resultant cases.

In January, 1891, two cases of Small-pox were brought to the City on a Portuguese schooner. Immediate isolation and other proper measures of precaution prevented any extension of the disease. Later in the same year, in April, a second outbreak of Small-pox occurred, amounting in all to 14 cases, but, as this outbreak was practically limited to the district of Bedminster, and in only one instance over-stepped the City boundary, it was possible to keep the resultant cases under observation, and the disease, despite a well-marked tendency to spread, disappeared completely in June. Full details of this outbreak, and of the origin and suppression of each offshoot of infection, were given in the Annual Report for 1891.

The Rise and Spread of Small-Pox, 1891-93.

The Registrar-General's Returns show that, whereas the total deaths from Small pox in the 33 great towns of England during 1891 did not exceed 18, of which 8 occurred in London, 7 in Birmingham, 2 in Liverpool, and 1 in Leeds; the mortality in 1892 reached a total of 120, the most heavily affected towns being Halifax, Oldham, Liverpool, Leicester, Bradford, Leeds, and Sheffield.

During the 1st Quarter of 1893, the deaths from Small-pox in England and Wales, which had been 76, 99, 86 and 165 respectively in the four Quarters of 1892, rose to 377, a higher number than in any Quarter since March, 1888. Of these 377 deaths, 60 occurred within an area consisting of London and adjoining Counties, and 281 within an area consisting of the Counties of Durham, Yorkshire, Lincolnshire, Nottinghamshire, Leicestershire, Derbyshire, Staffordshire, Cheshire, Lancashire and Denbighshire. Deaths from Small-pox occurred during the quarter in 20 of the 33 great towns, the rate rising in Halifax to 0·57, and in Oldham to 0·62 per 1,000 living.

During the 2nd quarter of 1893, the deaths from Small-pox increased from 377 to 519. Of these 519 deaths, 100 occurred in London and neighbourhood, 16 in Essex, 20 in Warwickshire, 25 in Derbyshire, 110 in Lancashire, and 138 in Yorkshire. Deaths from Small-pox occurred in 21 of the 33 great towns; in Oldham the death-rate from this disease was 0·88, and in Halifax 0·96 per 1,000 living. Among districts and sub-districts in which Small-pox was specially prevalent were Daventry, Chesterfield, Tideswell, Runcorn, Rossendale and Bingley.

During the 3rd quarter the deaths from Small-pox fell from 519 to 244, of which 49 occurred in London and neighbourhood, 32 in Essex, 16 in Staffordshire, 9 in Warwickshire, 18 in Derbyshire, 22 in Lancashire, and 57 in the West Riding of Yorkshire. Deaths from Small-pox occurred in 12 of the 33 great towns; in Oldham the death-rate from the disease was 0·24, in West Ham 0·48, and in Bradford 0·56 per 1,000 living. Among districts and sub-districts in which Small-pox was specially prevalent were Walsall, Chesterfield, Wakefield, and Goole.

THE TRAMP EPIDEMIC OF FEBRUARY, 1893.

Although we had carefully watched the progress of Small-pox in England through 1892, in expectation of its probable importation, it was not until the spring of 1893, when the remarkable and now historical extension of Small-pox over England by means of vagrants, took place, that Bristol suffered from its introduction.

The determining factor of this wide tramp-diffusion of Small-pox throughout England, which distinguished the February of 1893, was, there is little reason to doubt, the occurrence of a spell of bright and sunny weather following the cold and frost of January. The vagrant is, by force of circumstance, dependent on the weather; and when the frost breaks, but not till then, he leaves the big fire of the common kitchen, and starts on tramp.*

---

* The increase in the number of tramps passing through workhouses upon the occurrence of fine weather following frost in early spring, is of common occurrence.

During the winter months of 1892-93, Small-pox appears to have become firmly established amongst the nomadic inhabitants of the common lodging-houses in many of the seriously infected North country and Midland towns; and with them on their exodus, the tramps carried the seeds of Small-pox, and sickened by the way. This disease has a very fairly constant incubation period of 12 days, and for this period after contracting the disease its victim may, and often does, continue in apparent health. Now in 12 days a tramp can cover some 200 to 250 miles. In old times, before the supervision and inspection of common lodging-houses formed part of systematic public health work, Typhus dogged in similar manner the footsteps of the tramp from lodging-house to workhouse ward, and from town to town.

Armstrong † has shown that during this spring outbreak the infection of Small-pox was introduced by vagrants more than twice into 24 districts in England, 18 times into Blackburn, 15 times into Keighly, and 25 times into Nottingham.

The Bristol outbreak in the spring of 1893 was an offshoot of this general tramp epidemic. Between February 17th and April 18th, Small-pox was introduced upon six separate occasions* into our common lodging-houses by tramps arriving, with the disease upon them, directly from infected places. These houses would, under ordinary circumstances, be considered as likely centres for the rapid spread of an infectious disease, but, under control of a sort that secures early knowledge of cases, with prompt removal and strict disinfection, combined with continuous and systematic re-inspection, and the enforcement of daily returns from the keepers during the period of danger, they have proved singularly resistant to the spread of Small-pox, and up to the end of this primary epidemic in May, only nine cases occurred in the common lodging-houses, and two in a shelter of similar nature, but not coming under your Authority's powers of registration.

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† Report on Small-pox and Vagrancy in England and Wales. By Hy. Armstrong, D.Hy., Medical Officer of Health, Newcastle-on-Tyne, May, 1893.

* During the whole epidemic 11 tramp *introductions* of small-pox took place.

Some limited spread of disease did, as was to be expected, occur in the neighbourhood of these lodging-houses, and the total number of cases so occurring in the city, and referable to these houses, was, up to the last week of May, twenty-seven.

After this *no further case appeared over an interval of four weeks*, or double the accepted incubation period of Small-pox, showing presumably that the City had cleared itself of self-infection.

Two cases appeared simultaneously in the last week of June, and *no further cases through the whole of July*, the city being again clear of the disease.

In August one case appeared in the first and another in the second week, *after which was a barren interval of six weeks*, lasting until the third week in September.

Four fresh cases occurred in September and in October; these were followed by others in a manner which made it plain that the City was engaged with an advancing epidemic

THE AUTUMN EPIDEMIC OF 1893.

A glance at the accompanying chart* will show what was meantime happening in the adjacent district of St. George. As the City cases declined and died out in May, cases in that district began to increase. From the end of May up to the third week in September, during which only 4 cases, all unconnected with any previous City cases, came under notice; 25 cases of Small-pox had accumulated in this district, increasing by the end of September to 39 (Population Census, 1891—36,718). The St. George Authority had made Hospital provision, and the Officers, I believe, made every attempt to deal with the outbreak, but not all the cases were removed; and, as the event showed, the disease was not able to be controlled by the measures adopted. Your Authority gave assistance to St. George in the emergency, not only by lending the Ambulance for removal until one could be provided, but also by disinfecting for them their infected clothing and bedding, which were brought to your Central Disinfecting Station for treatment; and such assistance was continued through the epidemic.

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* Frontispiece.

By the end of September the disease had overstepped the St. George boundary into the adjacent district of Stapleton, which, having no Hospital accommodation of its own, had relied entirely upon the Isolation Wards of the Barton Regis Workhouse. St. George, Stapleton, Horfield, and part of Bristol are all included within the area of the Barton Regis Union, whose Guardians had hitherto accepted the responsibility of providing "Medical attendance and necessaries," including Hospital accommodation, for infectious cases amongst paupers within their Union.

The experience of Small-pox at Barton Regis, and especially that gained in the 1887-88 epidemic, had, however, sufficiently demonstrated that the proximity of the Infectious Wards to the Workhouse rendered them unsuitable for the effectual isolation of Small-pox, which almost invariably spread to the neighbouring Imbecile Wards, and as surely infected the adjacent streets of Eastville (Stapleton). The Guardians, therefore, gave notice that, on November 1st, 1893, their Wards would be permanently closed against all outside cases of Small-pox, and in this determination they appear to have received the support of the Local Government Board. At the same time they retained the Wards for the use of cases arising within their own walls.

The closure of these Wards amounted to an emphatic assertion of the policy that the Sanitary Authority and not the Guardians, should provide isolation accommodation for infectious cases, a policy unassailable in the abstract, but open to serious criticism if enforced at a critical and dangerous moment. The effect of this step was most seriously felt in Stapleton, where isolation accommodation was entirely absent and very difficult to obtain. Negotiations with Bristol were opened in October to provide joint temporary accommodation on a suitable site in the Stapleton district, but as the desired premises could not be obtained, the negotiations fell through, and Stapleton remained unable to help itself * Bristol fell back for the time upon the Port Hospital at Avonmouth and the Hospital Ship, which were used for convalescent patients, acute cases being treated in the St. Philip's Hospital; but, in December, the further increase of the disease led to the acquisition of the Bedminster Guardians' Hospital, adjoining the Novers Hill permanent Hospital Site, and further accommodation to the extent of 50 beds was erected upon this site in front of the advancing epidemic, so that at no time has a single City case had to be refused accommodation owing to a scarcity of beds, although at one critical period of the epidemic, one bed alone remained vacant.

Soon after the re-commencement of the disease in September, 1893, it showed a marked incidence upon two or three large factories in the City, some of whose hands resided and had evidently become infected in one or another of the outside districts. The disease soon became established in those parts of the City adjacent to the infected districts, but after October it became impossible to distinguish home cases from outside cases, and, as usual, the overlooking of one or two "trivial" private cases helped to establish some City foci of infection.

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* The Notification Act was not in force in Stapleton until December, 1st, 1893; an infectious Hospital was at length opened in 1894.

THE 1893-94 EPIDEMIC.

Tables and Statistics of the Outbreak.

It forms no part of our intention to present our statistical results as in themselves complete evidence of the amount or duration of the protective influence of vaccination and of re-vaccination. So far, however, as they agree with the results obtained in other towns during recent epidemics, and so far as they support the accepted propositions in regard to the protective influence of vaccination, laid down as the result of the large experience of the Local Government Board, and formulated in the Memorandum following, we consider that the facts observed may have some weight. Every fact has been very carefully checked, and we believe the figures are as unbiassed as it is possible to make them.

The Memorandum of the Local Government Board of date 1888, and still issued without modification, succinctly states the inferences which can be drawn from a very large number of facts, recorded in part by the Medical Officers of the Board, and in part by Medical Officers of Health, as to the protection afforded by vaccination and by re-vaccination. By the side of this Memorandum we are content to examine our results.

Memorandum on Re-vaccination.

The protection against Small-pox conferred by vaccination in infancy becomes diminished as age advances, and the protection against attack appears to more rapidly diminish than the protection against death by the disease. Even before puberty a portion of the original protection is often lost; and this is particularly the case when the vaccination in infancy has been incomplete, having produced one vesicle instead of several, small vesicles instead of large.

Before vaccination was discovered, Small-pox was for the most part a disease of children. Among the unvaccinated members of a community it is so to this day. But among vaccinated people, owing to the protection of the children and the decline of this protection as life advances, such Small-pox as now prevails is principally seen in adolescents and adults.

Thus it is of importance that the protection which vaccination affords to children should be renewed for them as they are growing up; and the law has provided gratuitous re-vaccination by public vaccinators for every one on reaching the age of 12 years who has not before been successfully re-vaccinated.

> A properly performed re-vaccination gives a second measure of protection at least equal to the first. Whether the protective influence of this second vaccination becomes impaired, and, if so, under what conditions, is not known.

Evidence of the additional protection against Small-pox given by a re-vaccination can be found abundantly by anyone who chooses to seek for it. It can be got from the experience of re-vaccinated communities living in the midst of communities not re-vaccinated, as in the case of the permanent officials of the postal service living in London ; or it can be got from the experience of nations, differing in their Small-pox death-rates as their laws for re-vaccination differ : witness the contrast between the German and Austrian rates of Small-pox mortality since the time when Germany, but not Austria, enforced re-vaccination upon children of school ages. Or evidence to the same effect is to be had by observing the immunity from Small-pox, for year after year, secured to nurses in Small-pox hospitals by re-vaccinating them before entering on their service. This last is perhaps the most obvious of all such examples ; and in the few instances where there has seemed to be exception to the rule of their immunity it has almost always turned out that the requisite re-vaccination had been by some chance omitted.

The re-vaccination which is proper to be done for every child ought to be a matter of regular system ; done as regularly, it were to be wished, as primary vaccinations are done for infants. There should be no waiting until an alarm about Small-pox is raised. The importance of these considerations will be obvious to anyone who considers the conditions for the proper performance of re-vaccination. The lymph has to be obtained from cases of primary vaccination ; it must not be taken from cases of re-vaccination ; it ought to be used in the freshest possible state, and, whenever practicable, direct from the primary vaccine vesicle. With such lymph at least 96 per cent. of re-vaccinations ought to be successful, in the sense of producing the best local result that the individual can obtain, and of giving him his full measure of additional security against Small-pox.

If, on the other hand, people will defer re-vaccination until there is actual alarm of Small-pox, and multitudes then present themselves for the operation at one and the same time, they must remember that the vaccinator has a first duty to infants whom the law requires to be vaccinated, and that he may at the particular moment be without lymph for re-vaccinations. Or, alternatively, the applicants may have to be re-vaccinated with stored lymph, and then failures and uncertain results are likely to ensue ; in the hands of some practitioners, indeed, as many as a third of the attempts at re-vaccination with such lymph have proved unsuccessful. And this disappointment in obtaining proper vaccination will be encountered just at the time when it is of special importance that the applicants should have the full measure of protection that vaccination and re-vaccination can give.

Medical and sanitary officers and the medical profession generally are therefore invited to urge upon parents and guardians the importance of having their children re-vaccinated at the age of 12 years or thereabouts and to urge upon all persons beyond this age who have not yet been successfully re-vaccinated the duty of obtaining for themselves the additional protection which may be had by this means

GEORGE BUCHANAN,
Medical Officer.

Local Government Board,
Medical Department,
March, 1888.

Public vaccinators are authorised to afford re-vaccination gratuitously to all persons over 12 years of age who have not previously been successfully re-vaccinated. Under circumstances of exceptional danger from Small-pox they have authority, if they see fit, to re-vaccinate applicants over 10 years of age.

CITY OF BRISTOL. SMALL-POX, 1893-94. Table A.—GENERAL.

	Age Periods. CASES. 0-10				10-15				15-30				30 upwards					DEATHS. 0-10		10-15		15-30		30 upwards			
No. of Marks.	Trivial	Discrete	Confluent	Hæmorr.	Trivial	Discrete	Confluent	Hæmorr.	Trivial	Discrete	Confluent	Hæmorr.	Trivial	Discrete	Confluent	Hæmorr.	Total Cases	Confluent	Hæmorr.	Confluent	Hæmorr.	Confluent	Hæmorr.	Confluent	Hæmorr.	Total Deaths	Percentage of Deaths to Cases
1	3	1	—	—	1	3	—	—	5	11	6	—	2	9	5	—	46	—	—	—	—	—	—	—	—	—	0
2	1	—	—	—	6	5	—	1	19	29	7	—	5	17	9	3	102	—	—	—	1	1	—	4	3	9	8·9
3	—	—	—	—	5	1	—	—	13	23	7	—	4	15	8	4	80	—	—	—	—	—	—	5	3	8	10
4 or more	2	—	—	—	1	2	—	—	22	23	3	1	—	4	1	1	60	—	—	—	—	—	1	—	1	2	3·3
Unvacc.	2	5	14	2	—	1	3	—	1	1	8	—	—	—	2	2	41	4	2	—	—	2	—	1	2	11	26·8
Stated to be Vacc. No marks	—	—	—	—	—	—	—	—	—	—	—	2	1	1	2	1	7	—	—	—	—	—	2	—	1	3	—
No inform No marks	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	2	—	—	—	—	—	—	1	1	2	—
Revacc. previous to contracting S. P.	—	—	—	—	—	—	—	—	4	2	—	—	4	2	2	1	15	—	—	—	—	—	—	—	1	1	6·6
Previous S.P. Unvacc.	—	—	—	—	—	—	—	—	—	—	—	—	1	1	2	—	4	—	—	—	—	—	—	—	—	—	—
Previous S.P. Vacc.	—	—	—	—	—	—	—	—	—	1	—	—	—	2	—	—	3	—	—	—	—	—	—	—	—	—	—
TOTALS	**8**	**6**	**14**	**2**	**13**	**12**	**3**	**1**	**64**	**90**	**31**	**3**	**17**	**51**	**32**	**13**	**360**	**4**	**2**	**—**	**1**	**3**	**3**	**11**	**12**	**36**	**10**
	30				**29**				**188**				**113**					**6**		**1**		**6**		**23**			

Table A.—GENERAL.

This table shows the particulars in regard to 360 cases occurring in sequence during the 1893-94 epidemic. The condition as to vaccination is stated at the time of "invasion," which is uniformly taken to be 14 days previous to the appearance of the papular eruption. The few cases in which vaccination was secured or attempted at a later period are shown in tables.

The division of the cases into Trivial, Discrete, Confluent, and Hæmorrhagic has been adopted as the most convenient. There can be no difficulty as to the meaning of the ordinarily accepted terms Discrete, Confluent and Hæmorrhagic, or as to the sharp boundary line between discrete and confluent, marking on the one hand the less severe and on the other hand the more severe and dangerous cases. Some very mild discrete cases (trivial) seem to us, however, to form a real and easily distinguishable group, comprising those cases where, after the initial fever (which may be severe), and the eruption of a very sparse crop of papules, sometimes not more than one or two, all constitutional symptoms at once and finally disappear, no secondary fever supervenes, and, but for the presence of the few abortive vesicles and pustules, the patient is quite convalescent.

The absence of deaths, and indeed of any severe cases in the vaccinated group under 10 years, and the special incidence of severe cases and of fatality upon the unvaccinated under 10 years, is entirely in accordance with general experience. In a well vaccinated town where the number of unprotected young children at these ages is proportionately small, the mortality is less formidable than in towns where large numbers of unvaccinated children afford suitable soil for the disease in its fatal form. Thus of our 36 total deaths, 6 only were the deaths of children under 10, **all of whom were unvaccinated ;** whereas in Leicester, out of a total of 21 deaths in 1892-93, 15 were the deaths of children under 10, **all unvaccinated ;** 4 of **unvaccinated** persons over 10, and 2 only of vaccinated persons, one aged 45, another (doubtful if vaccinated) aged 57. This is a terrible record of mortality among unvaccinated young children, who contributed more than three quarters of the total mortality of the whole epidemic, nor can it creditably support the boast of successful resistance to the practice of vaccination.

As age advances, the protection conferred by vaccination in infancy diminishes, and the protection against attack diminishes more rapidly than that against death. One death only occurred in any vaccinated child between 10 and 15, out of 29 cases, mostly discrete or trivial, in vaccinated children at these ages. The decreasing protection is shown by the increase in attacks with advancing age, and especially by the proportional increase in fatality at ages above 30.

Table B. **Showing attacks and deaths at various age groups among once vaccinated persons and persons stated to be once vaccinated, also showing the proportionate fatality at age periods, (Bristol, 1893-94.)**

	0-10	10-15	15-30	30 upwd.
Attacks	7	25	171	92
Deaths	0	1	4	17
Fatality... ... (Case mortality per cent.)	0	4	2·3	18

CITY OF BRISTOL—SMALL-POX, 1893-94.

Table C.

Showing the character of attack in 30 cases of Small-pox occurring in children under 10 years. 23 unvaccinated cases with 6 deaths, and 7 vaccinated cases with no death.

Notif. No.	Name.	Age. M	Age. F	Vaccinated. No of Marks.	Unvaccinated.	Results. Recovered	Results. Died.	Character of Case.	Remarks.	Family Groups.
987	1. Lilian B.		7		Unvacc.	R		Confluent		
1511	2. Laura M.		1		Unvacc.		D	Confluent	Vacc. on 6th day of infection, 1 small vesicle developed on 10th day, no protection afforded	
1546	3. Sidney H.	3 mos.			Unvacc.	R		Discrete	A severe case	
1764	4. Ellen L.		4		Unvacc.		D	Confluent		B
1765	5. Geo. W.	7			Unvacc.	R		Discrete	A mild case	A
1767	6. Ellen W.		5		Unvacc.	R		Discrete	A mild case	A
1816	7. Baby H.		18dys.		Unvacc.		D	Hæmorrhagic		
1822	8. Baby R.		4 mos.		Unvacc.	R		Confluent		
1864	9. Albert L.	5			Unvacc.	R		Confluent	— — — — — —	B
1871	10. Frank L	2			Unvacc.		D	Confluent	— — — — — —	B
1910	11 John H.	3			Unvacc.		D	Confluent		
1918	12. Irene B. A.		5		Unvacc.		D	Hæmorrhagic		
1928	13. George E.	5			Unvacc.	R		Confluent		
33	14. Willie W.	6			Unvacc.	R		Confluent	— — — — — —	C
41	15. Lilian T.		5 mos		Unvacc.	R		Confluent		
83	16. Daisy B.		5		Unvacc.	R		Confluent		
141	17. Alfred W.	7			Unvacc.	R		Confluent	— — — — — —	C
271	18. Minnie O.		8		Unvacc.	R		Confluent		
326	19. Edwin T. D.	1			Unvacc.	R		Discrete	A mild case	D
468	20. Emma F.		8		Unvacc.	R		Confluent		
1875	21. Baby C.		8 wks.		Unvacc.	R		Trivial, 2 pocks	Vacc. on 5th day of infection, 3 good vesicles	
1843	22. Regin. A M.	1			Unvacc.	R		Trivial, 40 pocks	Vacc. on 5th day of infection, 4 good vesicles	
377	23. William D.	7 mos.			Unvacc.	R		Discrete	Vacc on 6th day of infection, 3 good vesicles	D
1785	24. William J. L.	8		Vacc 4	7	R		Trivial	— — — — — —	B
1878	25. Clara W.		6	Vacc. 1g		R		Trivial, 12 pocks		
1967	26. Gerty T.		6	Vacc. 4g		R		Trivial		
74	27. Reg. A T.	1		Vacc. 1i		R		Trivial, 7 pocks		
212	28 . Florence J.		8	Vacc. 1i		R		Trivial		
290	29. Rosina W.		9	Vacc. 2g		R		Trivial		
446	30. Rhoda D.		5	Vacc. 1g		R		Discrete	A mild case	

g=good. i=imperfect.

Table C.

Experience generally shows that a successful vaccination performed before the 5th day of infection (reckoning infection uniformly at 14 days before the papular rash) will protect or materially modify the course of Small-pox.* The protection afforded by any vaccination after the 5th day is more problematical, and in the table such cases are referred to the unvaccinated class, to which class thus, be it observed, are credited not only the fatal result in case 2, but also the favourable results of cases 21, 22 and 23.

The cases marked 1i, are those showing only a single small scar of vaccination, the efficient protection to be derived from which is very doubtful; there is a growing tendency amongst some practitioners to vaccinate thus, with the result, as it appears to us, that the need for re-vaccination will, in persons thus imperfectly protected, arise somewhat sooner than in those more thoroughly vaccinated: if such re-vaccination be duly secured, there is not much harm done, but if not, the early fading of this imperfect protection will render the subjects liable to more and more severe attacks as age advances; and our close experience of over 600 cases of Small-pox has convinced us that this terrible disease, however safe to write about, is a dangerous enemy to play with. The safeguard of the unvaccinated and imperfectly vaccinated consists in the mathematical chance against their becoming exposed, but the extreme minuteness of this chance gives no satisfaction should it become realised.

The severity of the disease in the majority of the unvaccinated cases under 10 years, and the very mild character it assumed in vaccinated children at these ages, are particularly noteworthy.

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*This arises from the fact that, whereas the secondary fever of vaccinia, corresponding to the prodromal fever of Small-pox, does not occur till about the 8th day after vaccination; the onset of Small-pox itself (prodromal fever) commences on the 12th day after infection. Thus a margin of 4 completed days only, intervenes to allow of the vaccinal fever anticipating the variolous fever, a condition necessary to effectual protection.

CITY OF BRISTOL—SMALL-POX, 1893-94. Table D.

Showing the character of attack in 29 cases of Small-pox occurring in children between 10 and 15 years. Unvaccinated cases 4, no deaths. Vaccinated cases 25, 1 death.

Notif. No.	Name.	Age. M	Age. F	Vaccinated. No, of Marks.	Unvaccinated.	Result. Recovered	Result. Died	Character of Case.	Remarks.	Family Groups.
1484	1. Laura B.		13		Unvacc.	R		Discrete		
34	2. Annie W.		10		Unvacc.	R		Confluent		
45	3. William T.	13			Unvacc.	R		Confluent		
649	4. Bessie A		10		Unvacc.	R		Discrete	A severe case	
437	5. Albert T.	11		4g		R		Trivial		
1463	6. Henry S.	14		1g		R		Discrete		
1510	7. Rose M.		14	2i		R		Discrete		
1594	8. Laura W.		13	2g		R		Discrete		
1766	9. Ada W.		11	2		R		Trivial		
1827	10. Robert M.	12		4		R		Discrete		
1906	11. William C.	13		3		R		Discrete		
1920	12. Albert M.	14		3g		R		Trivial	101 pocks	A
1942	13. Lily M.		13	2g		R		Discrete		
31	14. Charlotte F.		13	2		R		Trivial		
44	15. Emily B.		10	4		R		Discrete		
78	16. George P.	11		1		R		Discrete		
139	17. Ellen M.		13	2			D	Hæmorrhagic		A
153	18. Henry C.	12		2g		R		Trivial		
160	19. Nellie L		10	2g		R		Discrete		B
161	20. Rose L.		14	2i		R		Trivial		B
211	21. Henry P.	12		2g		R		Trivial		
321	22. Grace M.		13	3g		R		Trivial		
371	23. Frances C		14	3		R		Trivial		C
373	24. Amy C.		10	3g		R		Trivial		C
372	25. Frank C.	12		3g		R		Trivial		C
379	26. Charles N.	14		1g		R		Trivial		
400	27. Emma B		12	2g		R		Discrete	A mild case	
461	28. Maud O.		11	1g		R		Discrete		
691	29. Florence C.		14	2g		R		Trivial		

Table D.

The table affords an illustration of the diminution of the protection afforded by vaccination as age progresses. Twenty-five vaccinated children in the 10–15 age group suffered, as against 7 in the 0–10 group. One fatal case occurred in a vaccinated child of 13, and is the only death we have met with in a vaccinated child under 15 in the course of two epidemics, 1887-88 and 1893-94, comprising 687 cases, 96 of which occurred in vaccinated children under 15.

It is thus in its way as exceptional as the trivial case of Small-pox in an unvaccinated person of 21, which was observed in this epidemic (Eliza, D. 21, f. 399).

Equally exceptional is the case of the child of Mrs. N. (case 60), which was born in the Small-pox Hospital during the early convalescence of its mother from a discrete attack. Although the child remained in the Hospital along with its mother for 21 days, it did not contract Small-pox; nor was it susceptible to vaccination—this was attempted three times—a fact equally important with regard to the relation between Small-pox and Vaccinia. In view of the researches during recent years into the nature of the immunity conferred by a first attack of certain infectious diseases, it is possible that the child owed its immunity to placental absorption of an antitoxin. The number of such instances on record is very few.

This instance agrees with Dr. Auchés conclusions from a series of cases *(Gazette des Sciences Médicales de Bordeaux)*,* who states:—" If Small-pox attacks the mother during pregnancy, different results may follow. When the child is born the period of incubation may be in progress, Small-pox is frankly manifested after a few days' interval, or the child may be born in Small-pox, or bearing the marks of the disease; it is refractory to vaccination.

" If the child has neither had Small-pox during the fœtal period, nor been born with it; and if the birth takes place whilst the maternal incubation period is in evolution, or when the eruption is out, or suppuration going on, it will be susceptible to vaccination; later on it will be immune, and this condition continues from a few months to two or three years."

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* Brit. Med. Jour, May 18, 1895, p. 1119.

Table E.

CITY OF BRISTOL. SMALL-POX, 1893-94.

INVADED HOUSES.

Table showing the incidence and mortality of Small-pox amongst 1,785 persons living in houses invaded by Small-pox (excluding the Tramp Epidemic, February to July, 1893.)

Number of houses invaded **237**. Average population in a house **7·5.** Number of attacks **330.** Number of deaths **33**. Case mortality per cent. (= fatality) **10**. Average number of attacks in a house = **1·3**.

Showing also for comparison some corresponding rates observed in the Warrington and Sheffield Epidemics named.

		City of Bristol, 1893-94					Comparative Returns. Warrington, 1892-93		Comparative Returns. Sheffield, 1887-88	
Ages		Population	Attacks	Deaths	Attack rate per 100 population	Death rate per 100 population	Attack rate per 100 population	Death rate per 100 population	Attack rate per 100 population	Death rate per 100 population
0-10	Unvaccinated at date of invasion	52	23	6	44·2	11·5	57·8	22·8	86·9	38·1
	Vaccinated at date of invasion	360	7	0	1·9	0	2·9	0·1	7·8	0·1
	Doubtful	0	0	0	—	—	—	—	—	—
	Re-vaccinated	0	0	0	—	—	—	—	—	—
	Previous S.-pox	0	0	0	—	—	—	—	—	—
10+	Unvaccinated at date of invasion	29	18	4	62	13·7	56·3	20·0	68·6	37·1
	Vaccinated at Date of Invasion	1196	251	17	20·9	1·4	27·1	1·8	28·1	1·4
	Doubtful	9	9	5	—	—*	—	—	—	—
	Re vaccinated	86	15	1	17·4	1·1	4·2	0	—	—
	Previous S.-pox	53	7	0	13·2	0	10·6	0	—	
	TOTALS ...	1785	330	33						

* The figures in these instances are too small to afford reliable rates.

From this table it appears that the **Vaccinated** had, as compared with the **Unvaccinated** in these houses:—

	In Bristol.	In Warrington.	In Sheffield.
At age below 10 years.	A **23**-fold immunity from Attack. A **complete** security against Death compared with a mortality amongst the unvaccinated of 11·5 per cent.	A **19**-fold immunity from Attack. A **228**-fold security against Death.	A **11**-fold immunity from Attack. A **381**-fold security against Death.
At age above 10 years.	A **3**-fold immunity from Attack. A **10**-fold security against Death.	A **2**-fold immunity from Attack. An **11**-fold security against Death.	A **2**-fold immunity from Attack. A **26**-fold security against Death

The total unvaccinated population at all ages, enumerated in invaded houses in Bristol was **81.** In **22** instances the initial case in a house occurred in an unvaccinated person, these were removed to Hospital, leaving **59** unvaccinated persons, who, by residence in the invaded houses, had been exposed to the infection of Small-pox. Of these 59 persons 27 now became vaccinated; and of these, 23 received this protection on or before the 5th day of exposure (when a successful vaccination implies good protection); 3 were not, however, vaccinated until the 7th, and 1 not till the 8th day of exposure; probably no measure of protection was afforded in these cases by this late vaccination. No one person of these 27 contracted Small-pox in any degree. Of the remaining 32 unvaccinated persons who were exposed to infection in the invaded houses, and did not become vaccinated, 19, or more than one half, contracted Small-pox.

The total once-vaccinated population at all ages, enumerated in invaded houses in Bristol (excluding the doubtful cases, the re-vaccinated before invasion, and those who had previously had Small-pox) was 1,556.

In **215** instances, the initial case in a house occurred in a vaccinated person, these were removed to hospital,* leaving 1,341 once-vaccinated persons who, by residence in the invaded houses, had been exposed to the infection of Small-pox.

Of these 1,341 persons, 468 now became successfully re-vaccinated, and of these recently re-vaccinated persons 8 only contracted Small-pox, and all within a period showing that they had become infected before re-vaccination was performed. All passed through mild attacks and recovered. The attack rate amongst the 859 once vaccinated persons who did not receive this protection amounted to 5 per cent.

In the case of 14 others of these 1,341 persons, the attempt at re-vaccination proved unsuccessful, and of these 3 developed Small-pox and 1 died.

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*Only 2 per cent. of cases had from unavoidable reasons to be left at home.

CITY OF BRISTOL.—SMALL-POX, 1893-94. Table F.

Showing the character of the attack in 41 unvaccinated cases. 30 recoveries, 11 deaths.

Notif. No.		Name.	Age. M	Age. F	Character of Attack.	Result. Recovered	Result. Died.	Remarks.
436	1.	Edwin H.	27		Confluent		D	Died on 12th day of illness
957	2.	Lilian B.		7	Confluent	R		
1413	3.	Daisy M.		15	Confluent	R		
1484	4.	Laura B.		13	Discrete	R		
1546	5.	Sidney H	3 mos.		Discrete	R		
1688	6.	William W.	26		Confluent	R		
1764	7.	Ellen L		4	Confluent		D	Died on 13th day of illness
1765	8.	Geo. W.	7		Discrete	R		
1767	9.	Nellie W.		5	Discrete	R		
1816	10.	Baby H.		18 dys	Hæmorrhagic		D	Died on 11th day of illness. Unsuccessful attempt to vaccinate on 9th day of infection
1822	11.	Baby R.		4 mos	Confluent	R		
1864	12.	Albert L.	5		Confluent	R		
1871	13.	Frank L.	2		Confluent		D	Died on 15th day of illness
1910	14.	John H.	3		Confluent		D	Died on 12th day of illness
1918	15.	Irene A.		5	Hæmorrhagic		D	Died on 10th day of illness
1928	16.	George E.	5		Confluent	R		
1930	17.	George M.	17		Confluent	R		
33	18.	Willie W.	6		Confluent	R		
34	19.	Annie W.		10	Confluent	R		
41	20.	Lilian T.		5 mos.	Confluent	R		
45	21.	William T.	13		Confluent	R		
47	22.	Walter H.	16		Confluent	R		
49	23.	Albert B.	18		Confluent	R		
70	24.	Joseph H.	16		Confluent	R		
83	25.	Daisy B.		5	Confluent	R		
122	26.	Alfred P.	45		Hæmorrhagic		D	Died on 6th day of illness
140	27.	John O'C.	36		Confluent		D	Died on 15th day of illness
141	28.	Alfred W.	7		Confluent	R		
177	29.	Mary S		74	Hæmorrhagic		D	Died on 9th day of illness
220	30.	George B	29		Discrete	R		
219	31.	Samuel G.	21		Confluent		D	Died on 14th day of illness
271	32.	Minnie O.		8	Confluent	R		
277	33.	Emily D.		28	Confluent	R		
326	34.	Edwin T. D.	1		Discrete	R		
399	35.	Eliza D.		21	Trivial	R		
468	36.	Emma F.		8	Confluent	R		
649	37.	Bessie A.		10	Discrete	R		

The following were also unvaccinated at date of infection, but were vaccinated at varying periods after infection, as shown,—

Notif. No.		Name.	Age. M	Age. F	Character of Attack.	Result. Recovered	Result. Died.	Remarks.
1511	38.	Laura M.		1	Confluent		D	Vaccinated on 6th day of infection, result, 1 small vesicle. Death on 11th day of illness.
1843	39.	Reginald M.	1		Trivial	R		Vaccinated on 5th day of infection; result 4 good vesicles, 40 pocks in all
1875	40.	Baby C.		8 wks.	Trivial	R		Vaccinated on 5th day of infection; result, 3 good vesicles, 2 pocks in all
377	41.	William D.	7 mos		Discrete	R		Vaccinated on 6th day of infection; 3 good vesicles

Table F.—The severe form assumed by the disease, and the large proportional fatality amongst these unvaccinated cases, are noticeable.

The protection to be afforded by vaccination after the 5th day of infection, when Small-pox has already taken a good hold, is very uncertain and generally nil; it appears indeed inadvisable to vaccinate after this date, as it only tends to obscure the protection afforded by a successful vaccination secured in time.

Table K.

l from ious pox ack.	Notes.
yrs.	
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,,	
,,	Delirious— caught cold 4 days before death
,,	
,,	
,,	
,,	
,,	Delirious-- jumped out of window
,,	
,,	
,,	
,,	
,,	
,,	
,,	
,,	Died on 7th day of disease, with apoplectic symptoms
,,	The son of this woman, aged 17 has been unsuccessfully vaccinated 6 times, 5 times by a Public Vaccinator, did not contract Small-pox
,,	
,,	

Table G. SMALL-POX—A SECOND TIME. BRISTOL, 1893-94.

Notif. No.	Name	Age		Unvaccinated	Vaccinated. No. of Marks	Small-pox at Age	Character of 1st attack	Pitting	Character of 2nd Attack	Result		Interval from previous Small-pox to attack
		M	F							Recovered	Died	
1567	1. Chas. T.	34		Unvacc		At 8 months	Mild	Very slight, 3 pits	Confluent	R		33 years
1667	2. Eliz. F.		53		1g	" In childhood "	?	No pitting	Discrete, modified	R		About 30 years
145	3. Jos. E.	70		Unvacc.		At 3 months		Pitting slight	Trivial	R		69 years
197	4. Frances W.		38	Unvacc.		Under 5 years		Pitting slight	Confluent	R		33 years
232	5. Rich. N.	65		Unvacc.		Variolated at 5 yrs	Severe	No pitting	Discrete, modified	R		60 years
314	5. Chas. W.	47			2i	" In youth "	Severe	Much pitted	Discrete, modified	R		About 30 years
462	7. Alice H.		27		4g	At 2 years	Slight	1 pit on face	Discrete, modified	R		25 years

Table G.

It is difficult to make sure of all cases where persons state they have had Small-pox previously, especially when the previous attack is referred to " infancy " and they present no definite pitting, or only such pitting as may follow the much milder and harmless chicken-pox.

In the above table, the shortest interval noted to re-infection is 25 years, but in the next table from Dr. Barry's Sheffield Report, shorter periods are observed; and it appears clear that the protection of Small-pox may fade in time, as does the protection of vaccination. Absolute protection for neither the one nor the other can be claimed.

Table H. CITY OF BRISTOL. SMALL-POX, 1893-1894.

Showing particulars of cases occurring in re-vaccinated persons.

Notif. No.	Name.	Age. M	Age. F	No. of Marks.	Re-vacc. at age.	Character of Attack.	Results. Recovered	Results. Died.	Interval from Re-vaccination to attack, in years
465	1. John H.	52		4g	States yes, ? age	Discrete	R		No information
1433	2 Emily H.		29	3g	States yes, ? age	Discrete	R		No information
1449	3. Martha S		48	3g	at age 28	Hæmorrhagic		D	20 years
1801	4. Harry J. M.	25		4g	at age 14	Discrete	R		11 years
1804	5. James M	26		3	at age 14	Trivial	R		12 years
1877	6. Henry H.	34		3g	at age 22	Discrete	R		12 years
1909	7. Mary A. N.		48	4i	at age 10	Confluent	R		38 years
59	8. John P.	40		3g	at age 23	Confluent	R		17 years
69	9 Mrs. E. T.		42	3	at age 22	Trivial	R		20 years
206	10. Jas. P.	69		1i	at age 24	Trivial	R		45 years
210	11. Geo. J.	42		2i	at age 12	Trivial	R		30 years
434	12. Mrs. Annie B.		30	1g	States yes	Trivial	R		No information
435	13. Geo. T. B.	26		2i	at age 14	Trivial	R		12 years
438	14. Tom B.	27		3i	at age 15	Trivial	R		12 years
486	15. Arthur A.	26		3g	at age 14	Trivial	R		12 years

Table H.

In 15 instances persons who gave the history of re-vaccination contracted Small-pox, and in all but three cases the disease was mild. Of these three cases one was Hæmorrhagic and fatal, the other two confluent but followed by recovery. The interval from re-vaccination to attack was, in the cases that recovered, 38 and 17 years, and in the fatal case 20 years. This fatal case occurred in a washerwoman engaged at the Hospital, whose re-vaccination had been secured during a previous outbreak of Small-pox, and who had passed through more than one epidemic with impunity. The result illustrates the fact emphasised in the Local Government Board's Memorandum, that the protection of vaccination, real though it is, fades, and that its repetition is necessary. especially in persons hourly exposed to contagion. In a similar way, as seen by the last table (G), does the protection of previous Small-pox, generally admitted to be effective, gradually fade, and the protection afforded by an attack of Small-pox is more lasting than that conferred by vaccination. The least period of protection noted in the few instances in the above table is, however, 11 years.

Table I.

Showing Small-Pox in Persons who were Re-vaccinated, but not until after contracting Small-pox.

Notif. No.	Name.	Age. M	Age. F	Primary Vacc.	Date of successful Re-vacc.	Interval from infection to Re-vacc.	Date of Rash.	Character of Attack.	Result. Recovered	Result. Died
6	1. Chas. B.	34		1g	Dec, 20, 1893	Re-vacc. on 7th day of infection	Dec. 28	Discrete	R	
64	2. Alice B.		30	3g	Jan 1, 1894	Re-vacc on 5th day	Jan 11	Trivial	R	
107	3. Emily H.		20	4	Jan. 3, 1894	Re-vacc. on 3rd day	Jan. 15	Trivial, 26 pocks	R	
119	4. Annie T		24	2g	Jan 12, 1894	Re-vacc. on 9th day	Jan 18	Trivial	R	
163	5. Herbert H.	19		4g	Jan. 16, 1894	Re-vacc. on 5th day	Jan. 26	Trivial	R	
186	6 Agnes W.		32	4g	Jan, 20 1894	Re-vacc. on 5th day	Jan. 30	Discrete	R	
421	7 Henry K.	26		3g	Mar. 13, 1894	Re-vacc. on 13th day	Mar. 15	Trivial	R	
507	8. John H.	30		1g	Ap. 2 1894	Re-vacc. on 6th day	Ap. 11	Trivial	R	

Table J.

Showing Small-pox in persons on whom an unsuccessful or too-late attempt at Vaccination or Re-vaccination was made after exposure to the disease.

Notif, No.	Name.	Age.		Primary Vacc.	Date of Attempted Vacc. or Re-vacc.		Date of Rash.	Character of Attack.	Result.	
		M	F						Recovered	Died
1511	1. Baby M.		1	0	Oct. 22	Vaccinated on 6th day of infection, 1 small vesicle appeared on 10th day	Oct. 29	Conf.		Died
1547	2. James W.	18		2i	Oct. 29	Attempted on 6th day	Nov. 4	Conf.		Died
1952	3. Mary B.		33	3	Dec. 22	Attempted on 9th day	Dec. 17	Discrete	Rec.	
150	4. Chas. P.	33		2	Dec. 25	Attempted	Jan. 22	Discrete	Rec.	
377	5. William D.	7 mos.		0	Feb. 26	Vaccinated on 6th day; 3 took	March 6	Discrete	Rec.	
1875	6. Baby C.	8 wks.		0	Dec. 15	Vaccinated on 5th day of infection; 3 took	Dec 24	Trivial	Rec.	
1843	7. Reg. A. M.	1		0	Nov. 30	Vaccinated on 5th day of infection; 4 took	Dec. 9	Trivial	Rec.	

Tables I. & J.

Any attempt at vaccination or re-vaccination after the 5th day of exposure, is, we consider, inadvisable, and only tends to obscure the protection undoubtedly afforded by a successful vaccination or re-vaccination performed in due time.

It has been already pointed out that cases 1 and 2 in Table J, are classed in Table C as unvaccinated, thereby adding two deaths to this class, but on the other hand cases 5, 6, and 7 with their favourable results are also referred to this class, which more than restores the balance of fairness in favour of the unvaccinated. In general a child vaccinated on or after the 5th day of infection, and not till then, should be classed as unvaccinated; and our practice is not to attempt vaccination at so late a date, though it is sometimes performed by the medical attendants.

PREVIOUS SMALL-POX, SHEFFIELD, 1887-1888.

Table K.

District.	Name.	Ref. page in Barry's Report	Age. M	Age. F	Unvacc.	Vaccinated—No. of Marks.	Previous Small-pox—Date.	Character of 1st attack.	Pitting	Date of 2nd attack	Character of 2nd attack.	Pitting	Result. R	Result. D	Interval from previous Small pox to attack.	Notes.
Brightside	1. Alf G.	52	19		Unvacc		1871	Mild	None	1888	V. Severe	Marked	R		17 yrs.	
	2. Eliz. M.	,,		44		2g	1870	Severe	?	1888	Semi confl	Much	R		17 ,,	
	3. Eliz. S.	,,		35		4g	1865	Mild	None	1888	Mild, 30 pocks	None	R		23 ,,	
	4 John M.	,,	21			3g	1872	Severe	Slight	1888	V. Mild	None	R		16 ,,	
	5. John B.	,,	35		Unvacc		1865	Mod. Severe	Slight	1887	Severe	None	R		22 ,,	
	6. Lily C.	,,		17		3g	1873	Mild	1 or 2	1887	V. Slight	None	R		14 ,,	
	7. Wm. H. W.	,,	21			1g & revacc. unsucc. in mititia in 1884	1870	Mild	?	1888	Confl.	?		D	18 ,,	Delirious— caught cold 4 days before death
N. Sheffield	8. J W.	73	55		Unvacc		1832	Severe	Yes	1887	Mild	None	R		55 ,,	
Sheffield Park	9. Lydia L.	87		17		5g	1874	Mild	None	1888	Mild, 24 pocks	None	R		14 ,,	
	10. Wm L.	,,	20			4g	1873	Mild	?	1888	Mild	None	R		15 ,,	
	11. Maria R.	,,		42	Unvacc		In childhood	Mild	None	1888	Mild	None	R		abt35 ,,	
	12. Jas R.	,,	40			2i	1872	Slight	?	1888	Semi-confl	?		D	16 ,,	
S. Sheffield	13. John S.	101	71		Unvacc		In childhood	Severe	Much	1888	Mild	None	R		abt60 ,,	Delirious-- jumped out of window
W. Sheffield	14 Geo. K	117	51			2	1864	Severe	Slight	1887	V. Slight, 6 pocks	None	R		23 ,,	
Ecclesall	15. Arth. W.	140	18			Yes	1871	Very Mild	None	1888	Mild	None	R		17 ,,	
	16. Alf D	,,	20			3g	1872	Severe	?	1888	Discrete	?	R		16 ,,	
	17. John W	,,	33			? no marks	1872	Slight	None	1888	Mild	None	R		16 ,,	
	18. Emma N.	,,		29	Unvacc		1859	Slight	None	1888	Mild	None	R		29 ,,	
	19. Eliza F.	,,		21		2g	1875	Very Slight	None	1887	V. Slight	None	R		12 ,,	
Nether Hallam	20. Eliza S.	157		63			In childhood	?	Yes	1887	Discrete			D	abt60 ,,	Died on 7th day of disease, with apoplectic symptoms
	21. Emma J.	,,		45	Unvacc		1843	Severe	Much	1887	Slight	None	R		44 ,,	The son of this woman, aged 17 has been unsuccessfully vaccinated 6 times, 5 times by a Public Vaccinator, did not contract Small-pox
	22 Rose Z.	,,		20	Unvacc.		1870	?	Yes	1888	Confl.			D	18 ,,	
	23. Martha H.	,,		23	Unvacc	1i	1866	Mild	?	1888	Coherent			D	22 ,,	

Inefficient or Spurious Vaccination.

If the vaccination lymph has deteriorated or become overgrown by other micro-organisms, neither will the resulting vesicle be characteristic, nor will the protection afforded be reliable. There is an obvious necessity for extreme care both in the selection of lymph and in the observation of results, lest the protection of a real vaccination may be discredited by the failure of a spurious one to protect. Fresh or preserved lymphs are liable to "epidemics" of inertness, and at these times they are, of course, quite useless for purposes of vaccination.

In illustration of this, Dr. Robert Lansdown, Assistant-Surgeon to the Bristol General Hospital, supplies this instructive account of his own experience:—

On January 23rd, 1894, the following 12 boys (aged from 10–15) were inoculated with a certain preserved foreign calf lymph. Each boy was inoculated in 3 different places over the left deltoid, by scarifying with a cleanly carbolised surgical needle.

When inspected on January 30 (8th day), each lad was found to have "taken"—nine of them in three places; three of them in 2.

Name.	No. of Marks.	Name.	No. of Marks
L. C.	3	S. F.	3
E. H.	2	F. J. T.	3
F. J. S	3	H. H.	2
H. P.	3	H. Hn.	3
H. W.	3	W. W.	3
W. E.	2	G. A.	3

The appearance in every case was somewhat that of vaccinia about the third day, two or three small papules on a congested bluish base. In no case had the papule advanced and become vesicular. The papules were of a brighter red than the surrounding base, resembling much in character the "apple jelly tubercle of lupus." In every case the axillary glands were enlarged and tender. I determined to watch them for another week

On February 7 (16th day) papules in the case of {L. C., E. H., F. J. S., H. P., H. W.} were fading, the epidermis covering the papules and congested bases were being shed in flakes, and the axillary enlargement and tenderness was diminished. In the other seven lads the appearance of the seat of inoculation, the axillary glandular enlargement, and the tenderness had not altered at all, and the epidermis was not being shed.

Having obtained some fresh "human lymph" from Messrs. Ferris & Co., I re-inoculated each of the first five, on the same arm, in the same number of places (3), each place being at the side of one of the original marks.

When I inspected them on February 14 (8th day, 2nd inoc.), each arm had "taken" successfully, and presented the normal appearance of a successful vaccination on the 8th day (a circular vesicle with a darkened depressed centre, surrounded by a pink zone—glands enlarged again and tender).

L. C.	+ 3
E H.	+ 3
F. J. S.	+ 3
H. P.	+ 3
H. W.	+ 1

On February 14, I also inspected the other 7 lads; the papules and surrounding bases were desquamating; the axillary enlargement and tenderness had gone down, so I determined to re-inoculate them also.

This was done with fresh human lymph, from Messrs. Ferris, on February 23. Every one of the 7 "took" successfully, and presented the normal appearance on the eighth day.

W. E.	+ 3
S. F.	+ 3
F. J. T.	+ 1
H. H.	+ 2
H. Hn.	+ 2
W. W.	+ 3
G. A.	+ 1

No scars are left from the first inoculations with the foreign calf-lymph and up to the present time the boys are in perfect health.

June, 1894.

R. POOLE LANSDOWN.

General Management of the Epidemic.

The general management of the epidemic did not, of necessity, differ from the routine adopted in most towns during outbreaks of Small-pox, and the first aim was to secure as rapid recognition, isolation in Hospital, and disinfection of rooms and belongings, as was possible. Table L. shows, from the Removal Officer's returns, in how short a time it was found possible to secure isolation; and, upon removal, disinfection of premises and belongings was secured with an equal expedition.

During the first outbreak of 1893 (Tramp Epidemic) daily returns were secured from the Common Lodging Houses, and the small extension of this epidemic, in spite of the renewed introduction of disease, is evidence of the soundness of the repressive measures adopted. Far otherwise was it with the return invasion, which, after some months' intermission, attacked the City from an outgrown district, where it had secured a strong footing. The success of measures against such a disease as Small-pox depends upon a faithful observance, not of one or another essential, such as, *e.g.*, immediate removal to Hospital, but upon the following up of this by the further essentials of disinfection, "quarantine observation," and attention to the vaccination and re-vaccination of exposed persons. Hence I consider it inadvisable and unsound policy to offer the relief of isolation Hospital accommodation to invaded outside districts, the subsequent control of whose cases is not at the same time assumed.

In order to minimise the risk from possible error in doubtful cases, it became the custom for the Medical Officer to visit cases before removal. As the relations between Practitioners and the Medical Officer of Health are uniformly friendly, requests to visit were very frequent, and no unpleasantness or friction resulted. Unless a very large number of "observation" beds can be held vacant, it is necessary to have some consultation opinion in many of the extremely modified and obscure cases which arise in the course of an epidemic.

City of Bristol.—Small-Pox Removal, 1894.

Table showing the period of time after receipt of Notification within which 170 cases occurring in 1894 were removed to Hospital:—

(Table L.)

Cases moved within				
1 hour	6	106 within 6 hours	167 within 12 hours	170
2 hours	29			
4 hours	43			
6 hours	28			
8 hours	27			
10 hours	26			
12 hours	8			
24 hours	1			
Cases not removed in 24 hours	2			
Total cases	170			

From this table it is seen that no avoidable delay occurred in securing removal after notification, as just two-thirds of the total cases were moved within six hours, although nearly every case was visited, prior to removal, by a Medical Officer, and on several days, 5, 6 or 7, and on one day as many as 9 cases had to be so visited and removed. The only two cases not moved within 24 hours were in the family of a contentious person, who refused to go to Hospital, and was subsequently fined £3 3s. and costs for exposing infected persons in public.

Quarantine Observation.

When a house becomes infected, it is necessary, not only to deal with the immediate case or cases, but to watch for the resultant cases, which may arise upon completion of the 12 days' incubation interval. The cumbersome method of quarantining the entire household, removed to and maintained for that purpose in an observation hospital, appeared to us to be unnecessary; and has already, we believe, been discredited upon experiment.

Every case, upon receipt of notification, receives its consecutive number, henceforward identified in the Office records with this case, and is entered upon a pocket card (of special colour for each disease). On this card is collected all information as to the case in hand, together with full particulars of name, age, place of work and condition as to vaccination of every inmate of the infected house.

A space is reserved in which is entered the calculated date period for the appearance of resultant cases, and the house, in addition to visits for three days after removal, is again visited for four days round this date. In this way secondary cases generally fall in conveniently to date, and this form of "quarantine observation" appears to be sufficient to meet all requirements.

Vaccination and Re-vaccination.

Particular attention was directed to secure vaccination or re-vaccination in inmates of invaded houses. The Guardians of the three Poor Law districts of the City issued placards and made what arrangements were permitted by the Instructions to this end; but as, in this matter, absence of delay is all important, your Committee had to make independent provision for securing the protection of vaccination or of re-vaccination for those willing to accept it. The wisdom of learning the places of work as part of the routine enquiry early in each case became apparent later on, when a "Notice to Employers" generally turned the scale in favour of a voluntary acceptance of vaccination by their employés.

In order to examine the influence exercised by total area of vaccination scar upon severity of attack, careful measurements of the scars were made in 121 cases, and the results are grouped in this table:—

(Table M.)

Age Period.	0-15.				15-30.				30 and upwards.			
Character of attack.	T.	D.	C.	H.	T.	D.	C.	H.	T.	D.	C.	H.
No. of Cases	11	6	—	× 1	34	32	6	—	3	18	xxx 8	—
Average area of Cicatrix.	26	15	—	2	39	30	31	—	18	22	13	—

T=trivial, D=discrete, C=confluent, H=hæmorrhagic, X=a death.

In the age period 0-15, the association of increased area of vaccination cicatrices with diminution in the severity of attack, is very striking.

In the next two-age periods the influence is less marked, though it still seems to exist in some degree, and it must be noted that in the period 15-30, the severe cases were near the 30 age-limit and not near the 15. In the third period at ages over 30, it is noticeable that, though all the confluent cases and all the deaths occurred amongst those having least average vaccination cicatrix area, the discrete cases had a larger average area than the trivial cases. Generally, as we approach and pass the age of 30, any uniform influence of area of vaccination scar upon the severity of attack tends to disappear.

Small-pox amongst Attendants and the Nursing Staff.

The pressure of the Small-pox epidemic caused the Port Shore Hospital and the Ship Hospital to be brought into use for convalescent cases, as well as the St. Philip's and Novers Hill Hospitals for acute cases of the disease, and thus brought an increased staff into immediate, and in most cases, daily contact with infected persons or things in various stages of the disease.

In this way a total of 62 persons were fully exposed to the chances of contagion, including 6 doctors (all recently re-vaccinated), 12 inspectors and clerks, 16 labourers engaged in the removal of and dealing with infected articles, 13 Hospital nurses and staff at the City Hospitals, 15 nurses and ambulance staff engaged on the Port Convalescent Ambulance and Hospital Service.

The condition as to vaccination and re-vaccination of these 62 persons, was as follows:—

Group.		Contracted Small-pox and Recovered.	Contracted Small-pox and Died.
1. Vaccinated but not re-vaccinated	1	1	0
2. Re-vaccinated in 1893	31	0	0
3. Re-vaccinated within 7 years ...	21	0	0
4. Re-vaccinated within 14 years ...	3	0	0
5. Re-vaccinated 14 years ago ..	1	1	0
6. Re-vaccinated 20 years ago ...	1	0	1
7. Had previously had Small-pox ...	4	0	0
	62		

The case in group 1 was that of a Hospital caretaker's wife, brought into contact with convalescent cases, who recovered after a light attack. The case in group 6 (1877), was that of a labourer engaged in dealing with infected clothing, who gave a history of successful re-vaccination 14 years before in the army, but whose marks were so imperfect that he was scheduled for re-vaccination when he sickened with a trivial attack. The case in group 7 was that of a washerwoman engaged in dealing with infected linen, who, having been re-vaccinated 20 years before, and having subsequently nursed Small-pox cases, and washed for them on several occasions with impunity, was, unfortunately, not included in the re-vaccination list; she died of a severe and hæmorrhagic attack. No one of the other 59 persons suffered from the disease in any degree.

The conclusion, supported by this experience, is that the protection of vaccination, though a real one, has a limit of time, as has the protection, equally real and somewhat more lasting, conferred by a previous attack of Small-pox. In an experience of over 700 cases, we have not yet met with the disease in a recently successfully vaccinated person, and we are anxious to do so, that we may add it to our record of unusual cases.

Somewhat different is the experience of the few persons accidentally brought into contact with Small-pox without the protection of recent re-vaccination:—

In two instances a nurse has communicated the disease to a friend, not re-vaccinated.

In one instance a workman carried the disease home to his wife, not re-vaccinated.

Three workmen out of 30 employed erecting the temporary hospitals, who were not re-vaccinated, sickened sequentially of Small-pox; the others then consented to be re-vaccinated, and no further cases occurred.

A man undertook to drive the infected clothes cart during the temporary indisposition, from an ordinary illness, of the driver, and not being re-vaccinated, he contracted a severe attack of Small-pox.

When the mother of a young child contracts Small-pox, it is the custom to admit the child, if vaccinated, with the mother into Hospital, and no child so admitted has ever come to harm. Thus Baby Weaver (363) and Baby Dawes, vaccinated ; Baby Caines (1875) vaccinated badly and again after admission, taking well ; and Baby Banfield (434), were all admitted with their mothers, who had Small-pox, and remained in excellent health. Baby C. did indeed develop two spots on one leg which may have been the most trivial form of Small-pox, but suffered no ill-health. Baby Turner, aged 18 months, an imperfectly vaccinated child (74) in a house where the sister, mother (trivial cases) and brother (unvaccinated, severe case) all had Small-pox in the same house, unrecognised and unreported for some time, also had trivial Small-pox, we counted carefully 7 spots in all, without any disturbance to health ; so that even this imperfect one-mark vaccination appears to have exerted a large measure of protection.

The Postal Service is under strict supervision as to re-vaccination, and, though much exposed to chances of infection, their immunity is noticeable.

The Police Surgeon does not mark a man as fit until he has been re-vaccinated or can prove vaccination to have been done within a few years. The immunity of the police is noticeable, though necessarily they are much exposed to chances of infection.

D. S. DAVIES, *Medical Officer of Health.*
J. C. HEAVEN, } *Assistant Medical*
W. DOWSON, } *Officers of Health.*

CITY OF BRISTOL.—SMALL-POX, 1893-94.

OCCUPATIONS.

(Table N.)

Occupations of Persons affected.	M.	F.	Children at School-age.	Total	Remarks.
1. Postal Service	*1	1*[2]	—	2	*Aged 14, engaged on Probation, so had not been re-vaccinated.
Police Service	0	—	—	0	
2. Teachers	1	1	—	2	*[2] Wife of a Postman, who was himself not affected.
3. Domestic Service		7	—	7	
4. Commercial—					
Insurance Agents, Travellers, etc.	4	1	—	5	
Clerks	5	3	3	11	
5. Railway Employés	7	2	—	9	
Hauliers	11	4	3	18	
Cab-drivers	4	1	1	6	
6. Trades & Occupations—					
Butchers	4	—	—	4	
Millers and Bakers	9	4	—	13	
Plumbers and Painters	10	3	—	13	
Masons, Plasterers, Carpenters and Builders	11	3	11	25	
Colliers	3	3	1	7	
Potters	—	2	1	3	
Sailors	2	—	1	3	
Hairdressers	2	—	1	3	
Bootmakers	5	2	2	9	
Other Retail Shopkeepers	15	1	3	19	
Publicans	1	3	2	6	
Enginemen and Firemen	6	2	4	12	
Dressmakers and Tailoresses	—	18	—	18	
Factory Hands	8	42	4	54	
Common Lodging-house keepers	3	—	1	4	*[3] One of these engaged at S.-P. Hospital
Washerwomen and Charwomen	—	6*[3]	2	8	
7. Irregular occupations—					
Labourers	32*[4]	13	16	61	*[4] One of these employed by the Sanitary Authority.
Porters, Newsboys, etc.	8	—	—	8	
Hawkers	1	—	—	1	
Paupers	5	3	—	8	
Tramps	13	2	1	16	
No occupation, out of employment	5	–	—	5	
					NOTE.—The wife of the Port Hospital Caretaker does not appear in this City list
	176	127	57	360	